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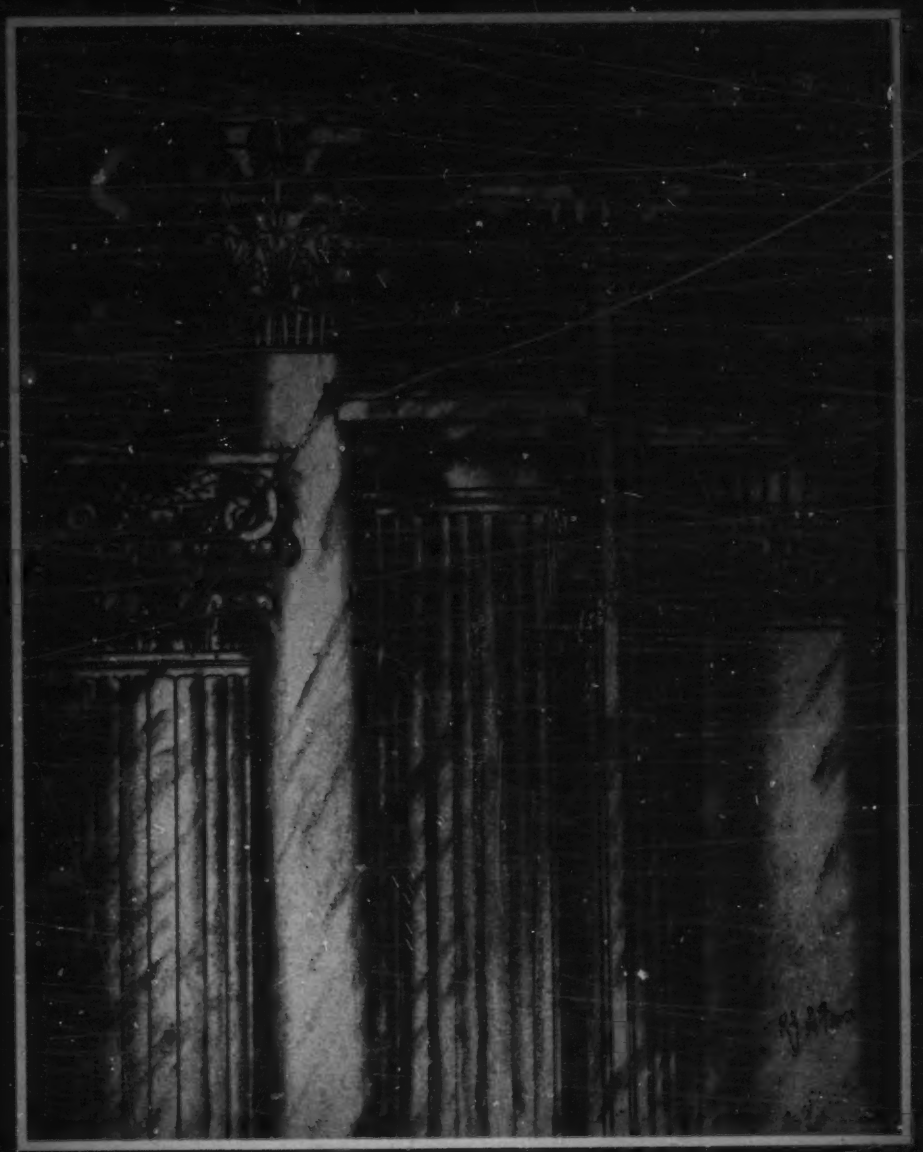

Current Research in CBER

Economic Development In The Tennessee Valley

Survey OF BUSINESS

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Fall 1990/Volume 26, Number 2

Erratum: The summer issue was incorrectly labeled as Vol. 25, No. 2. The correct volume should have read Summer 1990/Volume 26, No. 1.

COMMENTS

Any discussion of economic development in Tennessee must necessarily include an examination of the vitality of education, job training and employment opportunities, infrastructure, fiscal ability, and public policy. In the articles in this issue of the *Survey*, all gleaned from current research in the Center for Business and Economic Research, the authors examine current trends in these areas and suggest how beneficial changes might make the state's economic prospects even more vigorous.

In the first article, "Financing Economic Development in Tennessee," we consider the public sector expenditures of Tennessee state and local governments, particularly those targeted for education. Then we look at the constraints imposed by the revenue structure on the funding of development-related services,and finally, evaluate options for restructuring the revenue system.

In the next article, "Economic Determinants of Firm Longevity," by William F. Fox, John W. Mayo, and Susan Bott, we examine the economic and policy determinants of firms' longevity in the market. Employment stability, wage levels, employee training, and specialized equipment all affect the flow of benefits to the state and community as a result of the firm's presence.

In "Economic Development Incentives and the Tennessee Valley Economy," author Matthew N. Murray discusses how incentives and broader government policies can be used to divert resources to their most productive use and thus enhance economic growth and efficiency.

Understanding the structural changes that have been important in directing the path of the regional economy in the past is vital to understanding where the state has been, where it is now, and where it wants to go.

William F. Fox
Consulting Editor

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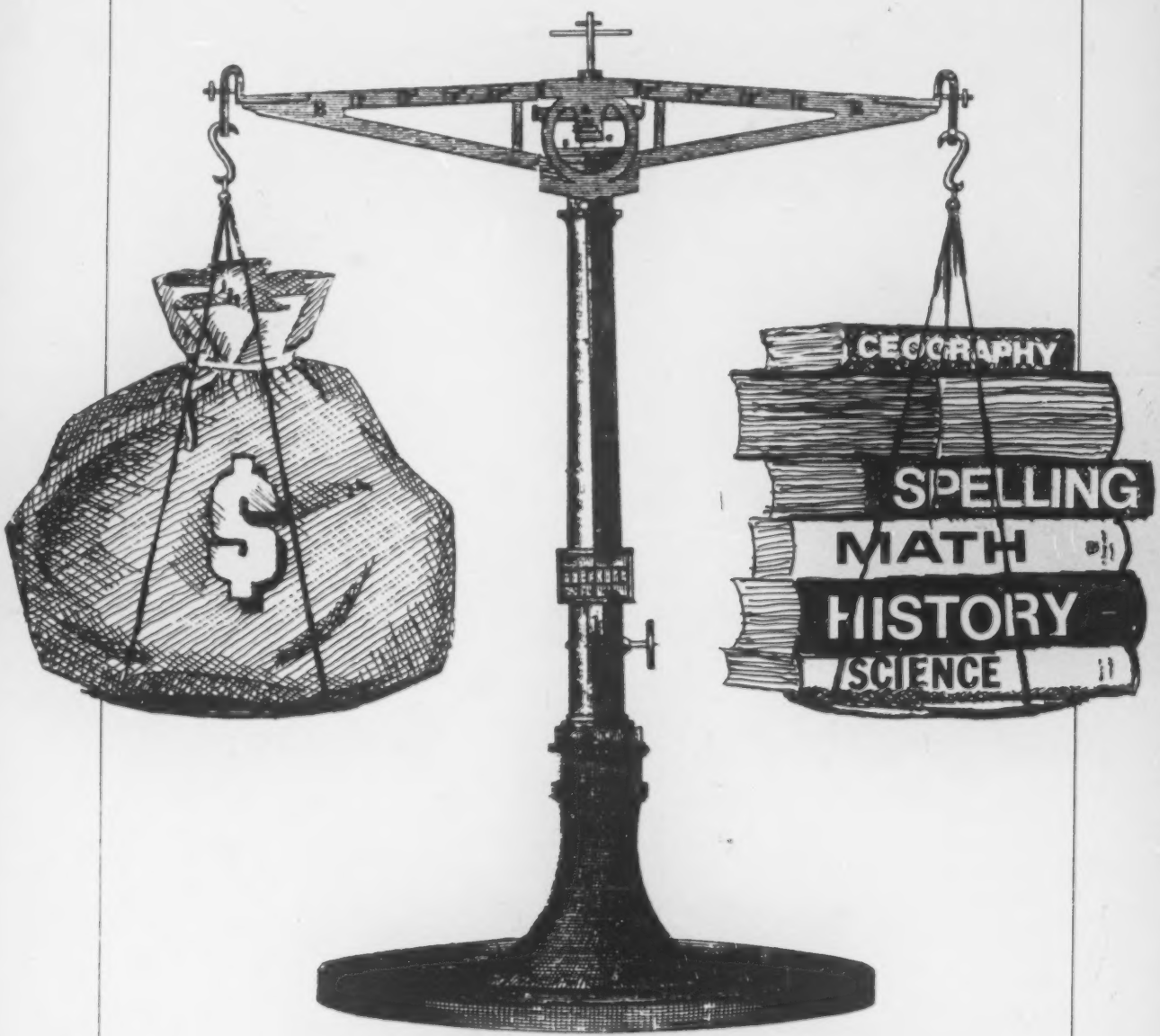


The state's economic future is dependent on establishing education funding as a priority to ensure that we maintain a labor force which is competitive with neighboring states.

FINANCING ECONOMIC DEVELOPMENT IN TENNESSEE*

by William F. Fox

When entrepreneurs decide to locate or expand in Tennessee, they look to state and local governments to provide certain services that enhance economic development.

Among the important factors that determine Tennessee's future economic growth will be private sector decisions of entrepreneurs as they start new businesses, of new firms as they locate headquarters, branch plants and offices, and of existing firms as they expand within Tennessee. In this scenario, state and local governments play a major supporting role. First, the public sector creates an atmosphere conducive for development by establishing policies consistent with good economic growth and protection of the quality of life. Second, the public sector provides services which are essential for good business. The most important among these are education and training, which allow a productive labor force and an appropriate infrastructure. A sound basic education is necessary to permit development, and infrastructure must accommodate development.

How will the state fund the necessary public services to promote development over the next 20 years? The first step is to consider the public sector expenditures of Tennessee state and local governments, and particularly those which are targeted for education. The second step is to evaluate the constraints imposed by the revenue structure on the funding of development-related services. Finally, options for restructuring the revenue system must be evaluated.

*The author wishes to thank Patricia A. Price, Research Associate, and Susan E. Bott, Research Assistant, at the Center for Business and Economic Research, for their assistance in this project.
(Ed. Note:) This article was based on *Economic Prospects for Tennessee's Future*, the CBER study published by the Tennessee State Planning Office for the Tennessee Economic Cabinet Council. Additional support for the analysis can be found in the CBER monograph, *Tennessee's Revenue Structure: A 20-Year Projection*.

State and Local Government Expenditures and Economic Development

State and local government expenditures in Tennessee are low when compared with other states. In 1987, Tennessee expenditures were $2,078 per person versus the U.S. average of $2,685 per capita. In fact, Tennessee ranks ninth out of twelve states in the low-spending Southeast. Louisiana leads the Southeast with nearly $400 more spending per capita than Tennessee, and Arkansas is at the bottom, about $170 below Tennessee.

Of the total amount provided, Tennessee state government expends 45.3 percent, and the combination of all local governments spends the remaining 54.7 percent. A significant amount of state government revenues are passed to local governments through shared taxes or appropriated revenue transfers. These are categorized as local expenditures.

Relatively low spending by Tennessee may partially be a tribute to conservative and efficient government. Indeed, Tennessee state government debt is only $466 per capita, well below the southeastern average of $824 per capita. Tennessee appears to get a very good return for the resources it expends, but there are limits to its ability to deliver the level of quality services without devoting the necessary resources.

Public expenditures are used for purposes that directly promote development, such as highways and education; services which enhance quality of life, (including parks and health care); and services that are important to equity, like Medicaid. Spending for local schools is a major component of Tennessee's investment in an appropriately skilled labor force, and it may be in this area where state and local governments can make the key difference in their long-term development prospects. In fact, the importance of education to development is growing even more with the need to have a labor force which is trained and is flexible for retraining.

Education expenditures represent 33.7 percent of Tennessee state and local government spending, a percentage which is lower than the 34.5 percent expanded in the U.S. and the 36.1 percent in the Southeast. The differences are even more striking for primary and secondary education, where Tennessee devotes 20.8 percent of its budget, while the average southeastern state allocates 24.4 percent. The 10.1 percent of state and local expenditures which Tennessee devotes to higher education exceeds the 9.6 percent spent by other southeastern states. Thus, Tennessee is a low-expenditure state and uses a below-average share of spending for primary and secondary education.

Per pupil education spending in Tennessee is dramatically below the U.S. and Southeast averages (see Figure 1). Data on per pupil education spending for Tennessee's 140 primary and secondary school districts make this point very clear (Table 1). Oak Ridge is the only school system which spends above the U.S. average, and only five others spend more than the Southeast average. There are wide differences across Tennessee in effort to provide education, since 38 districts spend less than one-half as much as Oak Ridge. In sum, as a rule, Tennessee school systems are failing to exert the effort for education being made by many competing states. While high spending alone does not assure quality education, it is an indicator of an area's priorities.

The primary and secondary education services provided by Tennessee school districts are financed by the federal, state, and local governments (see Figure 2). About 39.2 percent comes from local sources, 50.4 percent from state, and 10.4 percent from federal government sources. Although per pupil federal assistance is about the same for Tennessee as for other states, both Tennessee state and local governments finance less per pupil than their national counterparts. Tennessee local governments finance about the same per pupil spending as their southeastern counterparts, but the state itself finances much less. Thus, based on financing patterns in other states, it appears that both Tennessee state and the average local government can play a greater role in financing education.

FIGURE 1
Current Education Expenditures
Per Pupil in ADA, 1986

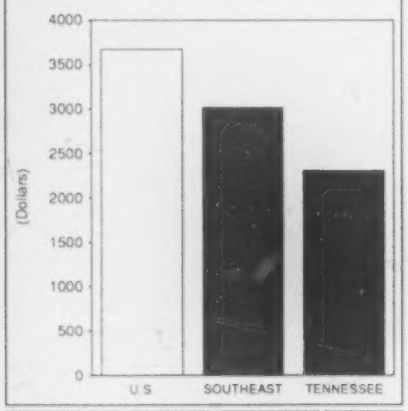
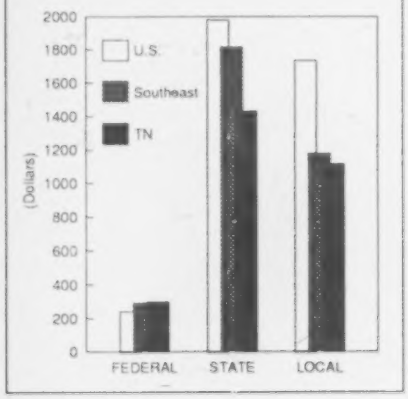


FIGURE 2
Per Pupil Education Funding from
Federal, State and Local Governments
1987



Two reasons are apparent for low financing of education by Tennessee state government and the average local government. One is a revenue structure which fails to generate sufficient resources. The second reason is that much state spending is for purposes such as Medicaid and corrections, which encourage economic development. These competing expenditure uses have absorbed rapidly growing budget shares at the state level. Per capita state spending for Medicaid has grown 10 percent annually during the past 15 years, even after netting out the effects of inflation. Corrections spending has risen 7.4 percent (net of inflation), but total state spending has grown only 2 percent. Between 1973 and 1988, per capita higher education spending has increased somewhat faster than total expenditures (2.8 percent), and aid to primary and secondary education has increased only 0.3 percent annually.

A means must be found to change the trend in state spending so that more funding is available for primary and secondary education. The state's economic future is dependent on establishing education funding as a priority to ensure that we maintain a labor force which is competitive with neighboring states. Continuation of past patterns in state and local expenditures and revenues are inconsistent with this priority. In a forecast made of state and local spending for the next 20 years with the assumption that the tax structure would remain unchanged, budgets would be balanced each year, and Medicaid expenditures would be allowed as an entitlement, showed that per capita state Medicaid expenditures will be 42.3 percent greater than state-financed education spending (including direct state education expenditures and aid to local schools), though per capita state education spending is currently more than twice as large as Medicaid. Further, per capita state transfers to local governments for education will actually fall when inflation is taken out. Combined state and local spending for education will decline to represent only 3.3 percent of state personal income in 2007, although it comprised 4.8 percent in 1987.

Revenue Structure

The Tennessee state and local government revenue structure, in keeping with overall expenditure patterns, is low relative to most other states. Revenue raised by all Tennessee state and local governments accounts for 13.1 percent of the state's personal income, though it is 15.2 percent of income for the average state.

TABLE 1
Current Education Expenditures per Pupil in Average Daily Attendance, 1986

Ranking	County	School District	Amount
1	Anderson	Oak Ridge	$3,710.03
UNITED STATES AVERAGE			**$3,676.93**
2	Sullivan	Kingsport	3,373.13
3	Sullivan	Bristol	3,351.63
4	Davidson	County	3,221.45
5	Blount	Alcoa	3,149.07
6	Greene	Greeneville	3,032.99
SOUTHEASTERN STATES AVERAGE			**$3,025.45**
7	Washington	Johnson City	2,941.77
8	Hamilton	Chattanooga	2,819.15
9	Coffee	Tullahoma	2,816.52
10	Anderson	County	2,728.88
11	Knox	Knoxville	2,720.92
12	Shelby	Memphis	2,715.67
13	Carter	Elizabethton	2,677.36
14	Sullivan	County	2,630.09
15	Coffee	Manchester	2,573.03
16	Dyer	County	2,454.67
17	Clay	County	2,450.79
18	Blount	Maryville	2,435.51
19	Hamilton	County	2,429.80
20	Madison	Jackson	2,411.59
21	Scott	County	2,370.99
22	Coffee	County	2,326.60
23	McMinn	Athens	2,324.68
TENNESSEE AVERAGE			**$2,312.08**
24	Hamblen	County	2,299.28
25	Montgomery	County	2,294.09
26	Bradley	Cleveland	2,292.74
27	Dyer	Dyersburg	2,287.75
28	Perry	County	2,282.10
29	Roane	Harriman	2,270.94
30	Hawkins	Rogersville	2,262.52
31	Knox	County	2,252.14
32	Rutherford	Murfreesboro	2,247.41
33	Henry	Paris SSD	2,231.57
34	Stewart	County	2,190.71
35	Blount	County	2,183.74
36	Obion	Union City	2,174.63
37	Loudon	County	2,168.61
38	Gibson	Gibson County SSD	2,165.33
39	Roane	County	2,142.26
40	Williamson	County	2,135.83
41	McMinn	County	2,131.75
42	Obion	County	2,122.76
43	Lincoln	Fayetteville	2,116.22
44	Lawrence	County	2,115.27
45	Giles	County	2,109.48
46	Bledsoe	County	2,105.04
47	Polk	County	2,104.08
48	Humphreys	County	2,086.45
49	Williamson	Franklin 9th SSD	2,083.37
50	Sequatchie	County	2,082.62
51	Pickett	County	2,076.31
52	Unicoi	County	2,074.10
53	Fentress	County	2,072.99
54	Lake	County	2,067.06
55	Henry	County	2,061.18
56	Carter	County	2,056.80
57	Marshall	County	2,049.18
58	Tipton	Covington	2,044.93
59	Maury	County	2,044.80
60	Jefferson	County	2,039.75
61	Benton	County	2,037.96
62	Hardin	County	2,035.75
63	Moore	County	2,030.39
64	Cocke	County	2,027.58
65	Shelby	County	2,025.04
66	Marion	County	1,999.76
67	Rhea	County	1,998.94
68	Loudon	Lenoir City	1,994.25
69	Claiborne	County	1,991.61
70	Sumner	County	1,989.41
71	Rutherford	County	1,981.21
72	Meigs	County	1,978.04
73	Gibson	Trenton SSD	1,974.07
74	Fayette	County	1,970.52
75	Hickman	County	1,970.23
76	Bradley	County	1,969.96
77	McMinn	Etowah	1,968.54
78	Cocke	Newport	1,967.99
79	Johnson	County	1,967.40
80	Crockett	County	1,962.03
81	Sevier	County	1,956.99
82	Overton	County	1,954.11
83	Anderson	Clinton	1,953.99
84	Robertson	County	1,949.34
85	Weakley	County	1,948.86
86	Wayne	County	1,947.33
87	Campbell	County	1,945.96
88	Hawkins	County	1,938.49
89	Hancock	County	1,938.14
90	Cumberland	County	1,930.94
91	Madison	County	1,918.17
92	Washington	County	1,900.73
93	Gibson	Humboldt	1,900.19
94	Greene	County	1,886.19
95	Decatur	County	1,876.90
96	Grundy	County	1,875.75
97	Haywood	County	1,865.67
98	White	County	1,862.92
99	Putnam	County	1,860.88
100	Monroe	County	1,859.69
101	Jackson	County	1,857.53
102	Henderson	County	1,856.13
103	Lincoln	County	1,848.12
104	Morgan	County	1,845.85
105	Trousdale	County	1,844.40
106	Warren	County	1,840.28
107	McNairy	County	1,836.07
108	Carroll	South Carroll SSD	1,835.36
109	Carroll	Huntingdon SSD	1,827.19
110	Lauderdale	County	1,818.71
111	Cheatham	County	1,809.77
112	Scott	Oneida SSD	1,801.54
113	Gibson	Milan SSD	1,798.65
114	Dickson	County	1,797.25
115	Wilson	Lebanon SSD	1,796.01
116	Carroll	Bruceton H R SSD	1,793.33
117	Grainger	County	1,784.27
118	Henderson	Lexington	1,780.68
119	Gibson	Bradford SSD	1,773.28
120	Smith	County	1,772.29
121	Carroll	West Carroll SSD	1,772.10
122	Franklin	County	1,765.25
123	Tipton	County	1,764.61
124	Van Buren	County	1,763.74
125	Bedford	County	1,761.53
126	Hardeman	County	1,760.55
127	Union	County	1,755.00
128	DeKalb	County	1,750.03
129	Monroe	Sweetwater	1,747.47
130	Rhea	Dayton	1,743.12
131	Carroll	McKenzie SSD	1,731.03
132	Houston	County	1,727.77
133	Cannon	County	1,718.09
134	Crockett	Bells	1,695.03
135	Macon	County	1,683.57
136	Wilson	County	1,677.31
137	Crockett	Alamo	1,665.83
138	Lewis	County	1,635.18
139	Chester	County	1,602.22
140	Marion	Richard City SSD	1,530.62
	Carroll	County*	0.00
	Gibson	County*	0.00

Sources: National Education Association, *Estimates of School Statistics, 1986-87*. U.S. Department of Commerce, Bureau of the Census, *Finances of Public School Systems in 1985-86*, Series GF-86-10, U.S. Government Printing Office, Washington, D.C. 1988. Tennessee Department of Education, *Annual Statistical Report of the Department of Education for the Scholastic Year ending June 30, 1986*. Table XL, pages 332-5.

Note: Includes expenditures financed from federal, state and local sources.
SSD Special school district.
*No county school system exists.

The Tennessee percentage has risen over the past 20 years, but only to offset the decline in federal government grants and loans. As a result, total state and local spending remains about the same percentage of personal income as in 1967.

State Revenues

What are the revenue-raising sources for Tennessee state government? They include taxes, various charges and fees, and interest earnings. Charges and fees include fees at state parks and charges for drivers' licenses. These three categories of own-source revenues comprise 72.0 percent of Tennessee's revenues, with the vast majority coming from taxes. The state also receives revenues through intergovernmental transfers from the federal government.

The composition of federal intergovernmental assistance has changed dramatically in recent years. In 1967, 40.5 percent was for highways, and 4.6 percent was for Medicaid. By 1988, 40.4 percent was for Medicaid, and only 13.9 percent was for highways.

As every consumer knows, Tennessee's tax structure is heavily oriented towards taxation of sales. The state generates 56 percent of tax revenue from the general sales tax and 21 percent from selective sales taxes, for a total of 77 percent from sales-based taxes. Examples of selective sales taxes include cigarette, alcohol, and tobacco taxes. The average U.S. state raises only 47 percent of its tax revenues from general and selective sales taxes, and differs from Tennessee by raising 32 percent from income taxes.

Essentially, Tennessee's concentration on the taxation of sales has resulted in a revenue structure which imposes relatively heavy burdens on businesses, which requires frequent rate increases because of slow growth, and which is unstable and causes very tight funding in recessions. The problems with revenue growth mean that Tennessee's revenue structure will inhibit the ability to fund development-related services, such as education and infrastructure, in future years.

Economic Development Effects

A common concern among policymakers is that high tax rates will discourage state economic growth. The major fear appears to be that firms will be less willing to locate headquarters or branch plants in a state as its tax rates rise. On the contrary, the vast body of empirical research on this subject evidences that taxes have very little influence on decisions to locate business firms. The reason is that business firms consider the cost of many factors in their siting decisions, and tax differentials between states tend to be small relative to the other costs. More important determinants in location decisions appear to be labor force characteristics and access to existing or new markets.

The research also suggests that to the extent taxes have an effect on business locations, it is greatest in states where tax rates are considerably above or below national norms. Tennessee's business taxes appear to be approximately in the middle among the states, so little effect on business locations should be anticipated because of our tax structure. Even so, it is interesting to note that Tennessee business taxes, particularly when business sales tax burdens are included, are higher relative to those in other states than are Tennessee's taxes on people.

Another concern which business firms have with the tax structure is that they want it to be predictable. Tennessee's need to raise rates frequently has introduced an uncertainty in the tax structure, which can be a negative factor for growth.

A second influence of taxes on economic growth is the so-called border tax effect, which refers to the influence of differences in tax structures and rates on where businesses locate along state borders. Tax effects might be on where people live, where they shop, and where goods are made, and these decisions could partially determine the economic health of border counties. Taxes are expected to have a greater

effect along the border than on new firm location, because many other factors which are important to a siting decision are the same regardless of which side of the border the location is made. For example, the availability of transportation and skilled labor and the access to markets will be identical whether a firm locates on the Tennessee side or on the other side of the border.

The potential for border effects is great in Tennessee, which is surrounded by eight states–more than any other state. Further, Tennessee's tax structure is radically different from the bordering states. All eight border states have an income tax and a lower sales tax rate than Tennessee's. Five of these states raise less than one-third of their tax revenues from a sales tax. In many cases the tax differences along the border are worsened because Tennessee's cigarette, alcohol, and gasoline tax rates are higher than the bordering states. When Tennessee residents and business firms evade Tennessee taxes by crossing the border for their purchases, this causes the loss of income, employment, and tax revenues to other states.

A study conducted for the Tennessee Special Joint Legislative Task Force on State and Local Tax Structure in 1985 concluded that Tennessee border counties lose at least 1 percent more of their sales every time the sales tax rate is raised one point. Along with the sales go employment and tax revenues from the affected industries.

Local Government Revenue Structure

To raise their own-source revenues, Tennessee local governments use taxes, charges and fees, and interest earnings which account for two-thirds of total local revenues. Intergovernmental transfers from the state and federal governments account for the remainder. The share provided by intergovernmental assistance has fallen dramatically since 1968, when it was responsible for 42.7 percent of local revenues. Specifically, state assistance has become a much less important source of funding, and federal aid has grown. Most of the state funds have been replaced by greater charges, fees, and interest revenues. Tax revenues also provide a smaller share of local revenues than in 1968. Sales and property taxes provide most local tax revenues. Other taxes include beer, business and wheel taxes. Sales taxes have been growing in importance, while property taxes have been diminishing.

In our analysis of capacity (or potential) to raise property and sales taxes for education for all Tennessee school districts, capacity was defined to be the revenues which could be raised for education if the state's average tax rate were imposed on the available tax bases in the area. Thus, differences in capacity across school districts reflect differences in the tax bases available for funding education. Table 2 illustrates the actual education revenues which are raised from the local sales and property taxes (Column 1), the capacity to raise revenues (Column 2), and the difference (Column 3). A positive difference indicates that the area has a greater capacity to raise revenues than it is using. That is, its rates are below the state's average. A negative difference indicates that the area is using greater effort than average.

The greatest capacity per pupil ($2,055) was in Davidson County, where it was six times higher than Hancock County ($325), the lowest county. With these data, it was determined that 14 school districts would need to raise their local option sales tax rate by 10 percentage points (well above the legislated ceiling) to provide per pupil education expenditures equal to the southeastern average. Another 60 districts would need to raise their rates by more than 5 percentage points. Thus, many local governments can be expected to provide competitive education services only with assistance from the state.

Revenue Options for Tennessee

With the existing tax structure, Tennessee could maintain current service levels for the next several years if the state's economy remains vibrant, but slow growth in the state's revenues would

necessitate some policy actions just to maintain service levels. A decision to influence our state's destiny through greater education expenditures will require even more funding.

Historical behavior seems to indicate that Tennesseans want at least to maintain state government revenues as a constant percentage of personal income. Keeping revenues at an approximately constant share of income can be regarded as status quo budgeting, and raising education spending will require further growth in spending. Policymakers have two options for maintaining revenues in this fashion. The first is the option which has been followed in recent years: increase tax rates frequently and allow the tax system to continue developing in a patchwork pattern.

Past funding patterns in Tennessee tell us much regarding this option. Estimates are that the state sales tax rate must be increased an additional 3 percentage points over the next 20 years if revenues are to maintain the same relationship with personal income. Local rates must be increased as well. These increases are sufficient only to maintain the status quo, not to fund improvements in education and training. The concern is how much further existing tax sources can be tapped without harming economic activity in sectors which are taxed heavily under a sales tax-based system.

The second option is to change the tax structure so that revenues grow more systematically with economic activity.

Inclusion of a broad-based state individual income tax as a component of Tennessee's revenue structure is one alternative for increasing funding for economic development-related services and for linking the tax structure more closely to economic growth. The income tax could be structured to raise whatever additional funds are needed for such services.

The income tax presumably would be a replacement for some other taxes and most likely would lead to a reduction in the sales tax rate. Whatever decision is made initially regarding the mix between sales and income taxes, the income tax probably would be a growing share of tax revenues because of its higher growth path.

Finally, income taxes allow the state more control over tax equity. The income tax would probably be proportional or progressive, but tax credits and exemptions can be used to target tax relief to any group of individuals. Similar exemptions from the sales tax, such as with a food exemption, cannot be targeted to certain individuals, but go to everyone.

Another way to restructure the tax system is to introduce a value added, or single business tax, for the state. This tax would be imposed on the value which is added by business firms at each step of the production process. In simple terms, value added by a business firm equals the firm's revenues minus the costs of intermediate products and raw materials which are purchased. The tax would be levied on all business firms in the state, including incorporated and unincorporated businesses.

A third way to restructure the tax system is to broaden the sales tax base to include many currently untaxed services. Major expansions of the base could lead to taxing that portion of construction which is currently untaxed (many materials are currently in the base), and most business services, health services, legal services, and education. One estimate is that Tennessee could generate as much as 35 percent of its revenues through taxation of these services, and about one-half of these revenues would arise from construction.

Expansion of the base has several desirable attributes. First, full expansion of the base to these services over the course of the next decade would help revenues remain a more constant share of personal income if no offsetting rate reductions were enacted. However, the base expansion alone would fail to provide sufficient revenues to offset the relative decline in revenues described above. Base expansion could potentially replace 1 to 2 percent of the sales tax rate increases which will be needed in the

TABLE 2
Actual and Potential Sales and Property Tax Revenues for School Districts Per Pupil in Average Daily Attendance, Year Ending June 30, 1986

Ranking	County	District	1 Actual Local Tax Revenues for Education[1]	2 Potential Local Tax Revenues for Education[2]	3 Difference (Potential Minus Actual)[3]
1	Davidson	County	$1,854.51	$2,055.16	$200.65
2	Blount	Alcoa	2,121.20	1,988.33	-132.87
3	Sullivan	Kingsport	2,021.68	1,752.41	-269.27
4	Rutherford	Murfreesboro	1,082.36	1,657.34	574.98
5	Sevier	County	952.59	1,455.52	502.92
6	Hamilton	Chattanooga	1,247.24	1,358.14	110.90
7	Knox	Knoxville	1,302.74	1,345.01	42.27
8	Washington	Johnson City	1,201.82	1,302.63	100.81
9	Madison	Jackson	800.68	1,300.61	499.93
10	Hamilton	County	1,201.13	1,255.37	54.24
11	Knox	County	1,212.90	1,250.91	38.01
12	Anderson	Clinton	846.55	1,218.65	372.10
13	Williamson	Franklin 9th SSD	1,259.71	1,208.65	-51.06
14	Sullivan	Bristol	1,982.22	1,164.16	-818.06
15	Sullivan	County	1,535.09	1,139.48	-395.61
16	Williamson	County	943.78	1,084.35	140.57
17	Anderson	Oak Ridge	1,526.24	1,075.73	-450.51
18	Coffee	Manchester	984.71	1,064.65	79.94
19	Madison	County	676.52	1,045.32	368.80
20	Washington	County	811.35	1,041.26	229.91
21	Bradley	Cleveland	946.98	1,039.36	92.38
22	Shelby	Memphis	1,349.27	1,036.40	-312.87
23	Shelby	County	968.15	1,015.26	47.11
24	Coffee	County	802.04	1,011.48	209.44
25	Blount	County	797.97	1,003.55	205.58
26	Henry	Paris SSD	863.48	993.51	130.03
27	Greene	Greeneville	1,176.71	970.51	-206.20
28	Lincoln	Fayetteville	625.04	962.99	337.95
29	Rhea	Dayton	479.68	946.74	467.06
30	Anderson	County	787.21	938.23	151.02
31	McMinn	Athens	925.95	934.53	8.58
32	Putnam	County	699.32	933.56	234.24
33	Blount	Maryville	1,110.38	929.13	-181.25
34	Wilson	Lebanon SSD	728.97	923.60	194.63
35	Coffee	Tullahoma	1,244.92	904.94	-339.98
36	Hamblen	County	903.96	903.14	-0.82
37	Rutherford	County	816.81	900.88	84.07
38	Maury	County	844.79	895.14	50.34
39	Marshall	County	801.94	890.27	88.33
40	Hawkins	Rogersville	840.09	888.40	48.31
41	Cumberland	County	682.30	879.47	197.17
42	Cocke	Newport	610.21	877.33	267.12
43	Bradley	County	742.70	858.82	116.12
44	McMinn	County	682.26	840.33	158.07
45	Perry	County	532.49	825.12	292.62
46	Henry	County	798.40	824.21	25.81
47	Hardin	County	612.47	822.49	210.02
48	Dyer	County	575.06	796.30	221.24
49	Loudon	County	844.16	789.11	-55.05
50	McMinn	Etowah	655.01	776.51	121.50
51	Henderson	Lexington	449.11	773.81	324.70
52	Humphreys	County	683.57	762.24	78.67
53	Moore	County	865.77	755.68	-110.09
54	Wilson	County	551.60	751.12	199.52
55	Montgomery	County	1,055.87	749.32	-306.55
56	Dickson	County	730.20	744.81	14.60
57	White	County	483.74	744.37	260.63
58	Sumner	County	735.16	739.49	4.33
59	Giles	County	717.02	732.17	15.15
60	Greene	County	511.27	728.76	217.49
61	Weakley	County	590.22	726.52	136.30
62	Dyer	Dyersburg	1,012.60	726.34	-286.26
63	Obion	County	757.79	715.10	-42.69
64	Lincoln	County	518.70	714.79	196.09
65	Gibson	Gibson County SSD	840.99	706.82	-134.17
66	Decatur	County	417.06	705.15	288.09
67	Warren	County	629.72	702.30	72.58
68	Bedford	County	571.23	702.26	131.03
69	Haywood	County	517.13	690.63	173.50
70	Smith	County	757.09	689.91	-67.19
71	Crockett	County	511.06	688.35	177.29
72	Sequatchie	County	664.14	687.94	23.80
73	Gibson	Trenton SSD	671.89	681.32	9.43
74	Tipton	Covington	546.76	680.13	133.37
75	Van Buren	County	429.72	675.49	245.77

TABLE 2 (Continued)

Ranking	County	District	1 Actual Local Tax Revenues for Education[1]	2 Potential Local Tax Revenues for Education[2]	3 Difference (Potential Minus Actual)[3]
76	Jefferson	County	586.60	675.32	88.71
77	Robertson	County	659.57	671.98	12.40
78	Lawrence	County	587.06	667.91	80.85
79	Benton	County	478.13	662.32	184.19
80	DeKalb	County	552.61	657.17	104.56
81	Hickman	County	551.72	650.32	98.60
82	Obion	Union City	961.73	638.48	-323.25
83	Marion	County	562.20	635.99	73.79
84	Fentress	County	274.72	627.48	352.76
85	Macon	County	524.62	621.59	96.97
86	Stewart	County	789.97	619.55	-170.42
87	Pickett	County	236.42	615.36	378.94
88	Hawkins	County	710.84	615.22	-95.62
89	Cocke	County	420.98	595.21	174.23
90	Lake	County	494.43	593.48	99.04
91	Carter	Elizabethton	984.30	593.24	-391.06
92	Bledsoe	County	416.73	592.83	176.10
93	Unicoi	County	584.22	592.56	8.34
94	Gibson	Bradford SSD	679.47	591.95	-87.52
95	Carroll	South Carroll SSD	699.82	589.62	-110.20
96	Johnson	County	581.46	588.42	6.96
97	Carroll	Huntingdon SSD	762.01	585.62	-176.39
98	Gibson	Milan SSD	485.30	580.88	95.58
99	Franklin	County	461.83	578.11	116.28
100	Trousdale	County	686.36	576.81	-109.55
101	Monroe	County	576.96	576.49	-0.47
102	Wayne	County	629.92	575.80	-54.12
103	Cannon	County	415.29	572.63	157.34
104	Fayette	County	328.88	566.51	237.63
105	Rhea	County	549.64	564.96	15.32
106	Meigs	County	506.32	564.80	58.48
107	Roane	County	766.66	559.19	-167.47
108	Henderson	County	409.41	559.01	149.60
109	Tipton	County	345.93	554.49	208.56
110	McNairy	County	412.83	552.87	140.03
111	Jackson	County	448.48	552.37	103.89
112	Lewis	County	282.67	545.07	262.40
113	Overton	County	504.51	541.80	37.29
114	Monroe	Sweetwater	658.08	541.55	-116.53
115	Chester	County	336.43	539.98	203.55
116	Campbell	County	594.23	529.60	-64.63
117	Hardeman	County	543.43	523.79	-19.64
118	Polk	County	797.60	523.45	-274.15
119	Crockett	Bells	1,403.08	521.44	-881.64
120	Clay	County	510.56	519.71	9.15
121	Cheatham	County	525.44	510.84	-14.60
122	Gibson	Humboldt	512.05	503.85	-8.20
123	Roane	Harriman	808.63	499.48	-309.15
124	Loudon	Lenoir City	878.03	495.23	-382.80
125	Claiborne	County	644.97	495.18	-149.79
126	Carter	County	621.01	489.97	-131.04
127	Carroll	Bruceton H R SSD	770.21	488.19	-282.02
128	Houston	County	440.14	485.01	44.87
129	Crockett	Alamo	489.38	471.61	-17.77
130	Lauderdale	County	212.93	470.64	257.71
131	Marion	Richard City SSD	535.02	465.20	-69.82
132	Carroll	McKenzie SSD	606.59	460.13	-146.46
133	Scott	County	378.25	457.42	79.17
134	Union	County	522.15	436.84	-85.31
135	Grainger	County	435.30	433.73	-1.57
136	Morgan	County	511.77	397.62	-114.15
137	Grundy	County	409.80	386.69	-23.11
138	Scott	Oneida SSD	491.84	379.40	-112.44
139	Carroll	West Carroll SSD	787.90	340.02	-447.88
140	Hancock	County	172.11	325.29	153.18

*Special School Districts

1. Per pupil sales and property tax revenues for education.
2. Per pupil sales and property tax revenues which could be raised using average tax rates for education.
3. Column 2 minus Column 1. A positive number means that current effort is below average and a negative number means that current effort is above average.

Source: CBER calculations.

future, but a 3 percent increase is anticipated. Also, base expansion would increase the sales tax elasticity because the purchase of services is growing faster than the purchase of goods; however, the effects would be modest, and the tax structure would remain relatively slow growing and only slightly more stable. Thus, base expansion probably would be combined with rate increases.

Border tax effects also would probably increase, because Tennessee would tax many services which are untaxed by neighboring states. Business tax burdens would rise relative to personal tax burdens because businesses purchase a greater percentage of these untaxed services than of the currently taxed services. Finally, the tax structure would remain regressive even if the sales tax base is expanded.

Local Revenue-raising Options

Local governments must have an adequate revenue structure if they are to provide the education, infrastructure and other services which support development of the private sector. Some Tennessee local areas have sufficient capacity to fund these services and others do not, and the need is to provide greater capacity for all areas to provide sufficient services to increase their economic development potential. The revenue-raising change must be to make the potential to fund these services more even, though local areas must retain some ability to decide how much of the potential to exercise. A limited set of alternatives exists for providing greater equality in the capacity of local governments to deliver the services necessary for economic development across the next 20 years. One option would be for the General Assembly to authorize local income taxes, which, in practice in other states, normally means local wage and salary taxes. Local income taxes offer the opportunity to tax earned income where people live, rather than where they spend their money or where their place of business is located.

The revenues which counties could generate from a local income tax were estimated for all Tennessee counties by assuming that the reported income for each county's residents from wages, salaries, and proprietorships could be taxed. An average tax rate was estimated by determining the rate which would need to be imposed statewide to finance all local spending for education. This average rate was then applied to the income in each county, and the per pupil revenues which the county could raise were estimated. The finding was that revenues would be distributed no better if the tax structure relied on local income taxes than sales and property taxes.

There are no large local tax bases which, if used, would achieve a distribution of local government revenues that would permit all counties to finance competitive education and infrastructure. The only technique which would appear to lead to a significantly better distribution of revenues would be for the state government to redistribute intergovernmental assistance in an appropriate manner. There are several options for redistribution. First, existing formulas such as the school foundation formula could be adjusted so that funding is distributed in a manner which allows education services to be provided according to local needs. A similar, though much less effective means (because less total revenues are involved) would be to distribute the Hall Income Tax (a tax which is levied on interest and dividend income) on the basis of some indicator of need rather than on the basis of situs of collections. Neither of these techniques would raise the size of government at the state or local level, though local governments which lose revenues through a new distribution system could choose to raise rates on their sales or property tax bases to replace the losses, and thereby raise the size of government.

Another approach would be for the state to lower all local sales tax rates by 1 or 2 percent and to raise the state rate by the corresponding amount. The revenues could be distributed in the desired manner, with little increase in the overall size of the state and local public sector. This approach could generate significantly more resources for redistribution than the other alternatives and could dramatically alter the relative distribution of revenues.

A final alternative would be to raise the size of the public sector using one of the state alternatives described above. The new revenues, or some portion of these revenues, could be allocated for assistance to local governments.

A means also must be found to eliminate the potential funding disparity between a county school system and other school systems in the same county. State requirements for distribution of education funds place the county school system at a disadvantage in cases where there are multiple school systems. County tax revenues must be allocated across school districts according to the percentage of weighted full-time equivalent average daily attendance (WFTEADA) in each district. As a result, every increase in county tax rates for education leads to an equal increase in WFTEADA in every school system. However, city and special school districts are not required to share revenues with the county system. This means that city and special school districts receive from the county the same local revenues per WFTEADA as the county school system, but they can add to their spending with additional taxes for education. Thus, county school systems are unable to spend more than other districts in the county and in all likelihood, will spend less. One solution is to allow each county to have only one school system. The other approaches would involve permitting the county to levy a tax where the revenues are completely targeted for the county school system would permiting the county system to have per pupil expenditures equal to those of other systems in the county. The latter may work poorly in many circumstances if the county levies the tax outside other school districts. The reason is that cities often annex much of the business tax base and the county would need to levy high rates to equalize spending with other districts.■

ECONOMIC DETERMINANTS OF FIRM LONGEVITY

by John W. Mayo, William F. Fox, and Susan E. Bott

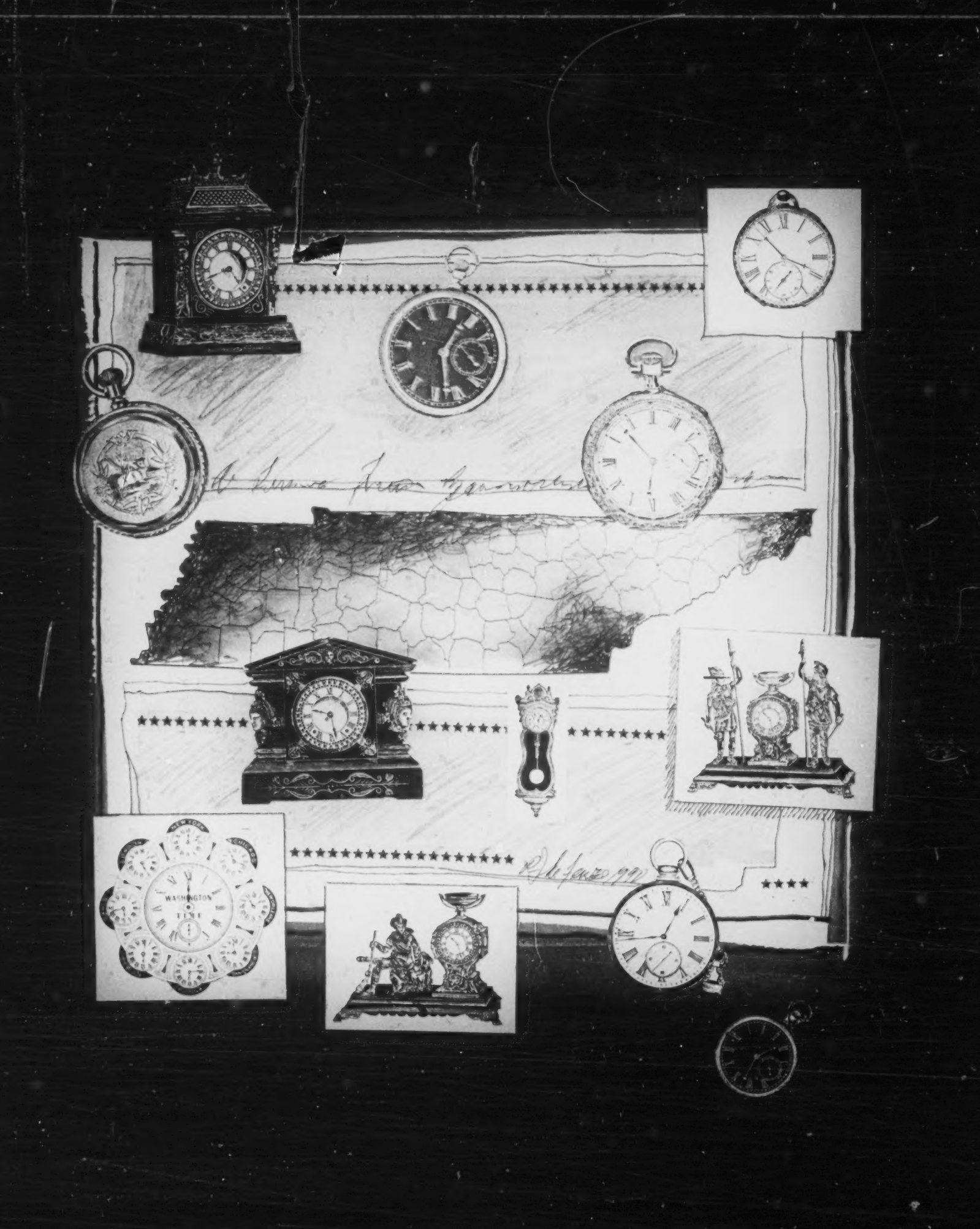
The net benefits to society of a firm's presence depend on the length of time the firm remains in operation.

Often, states assess the value of a newly arrived business in the region or a brand new firm by the number of new employment opportunities the firm is likely to create. This tendency is reinforced by the popular press, which frequently will report the arrival or start-up of a firm with X number of employees. The clear inference is that the larger X is, the larger are the commensurate economic benefits to the region's economy from the firm.

But only a moment's reflection reveals that a variety of other characteristics, beyond the entry decision, affect the level of economic benefits that flow from the firm to the regional economy.

For instance, employment stability, the firm's wage levels, the extent of basic employee training, and the amount of specialized equipment training all affect the flow of benefits to the community and the state as a result of a firm's presence. These employee-employer characteristics, in turn, depend partly upon an even more basic set of characteristics: specifically, the firm's longevity (or duration) in the market.

Given the resource costs, both public and private, that are involved with the start-up of a firm, the net benefits to society from the firm's presence depend critically on the length of time the firm remains in operation. Consequently, because the net benefits to Tennessee from firm start-ups or new branches depend on the longevity, or duration, of the firm, it becomes important to understand the economic and policy determinants of firm duration. Accordingly, the Tennessee Department of Employment Security (TDES) and the Center for Business and Economic Research (CBER), College of Business Administration, The University of Tennessee, Knoxville, decided to jointly investigate these economic and policy determinants of firm duration.


WASHINGTON
TIME

This study is one in a series of analyses on the unique attributes of Tennessee business which have been undertaken jointly by the TDES and CBER. Others in the series, available from TDES or CBER, include Entries and Exits of *Firms in the Tennessee Economy: 1980-1985, October 1987; and Firm Entry and Exit: Economic Linkages in Tennessee, July 1988.* Related work undertaken in conjunction with the Tennessee Advisory Commission on Intergovernmental Relations (TACIR) resulted in a report entitled *Local Public Policy and the Location of Business Activity.*

Although the second phase of the current study is still in progress, the initial findings revealed some important results. For instance, the data are useful to policymakers in understanding how long firms will live and what economic determinants affect their lives. This information is also valuable to managers and entrepreneurs involved in planning new ventures. In addition, the analysis permits measurement of the time period in which benefits of a new business are sustained by a city, county or state. Such information can be important for policy decisions regarding the public resources devoted for training employees or improving infrastructure to accommodate a new establishment.

A major conclusion of the study is that it may be appropriate to devote more resources to a firm that is expected to have a longer life but employ fewer people, than to do the reverse. For example, a firm which sites in Tennessee, employs 500 people, and remains in business for 20 years, may be of much greater value to the state's economy than one which employs 1000 people, but operates for only five years. A greater public investment may therefore be indicated for the smaller firm.

Another major benefit gained from this research is the evidence that analysis can help identify firms that are most likely to close down in the near future. This identification process can be important to TDES as it seeks to avoid situations where firms close down with large unemployment insurance tax liabilities.

Finally, the results may be useful in assisting the state with an early warning system for firm shutdown. The findings could be used to help identify where resources may be needed to assist workers who will be impacted by closings and, where possible, to allow the state to assist firms before they close.

Descriptive Statistics of Tennessee Firm Duration

To study the issue of firm longevity, it was necessary to gather data on the complete history of firms in Tennessee. Because of the scope of such an undertaking, the study was limited to the 1978-1987 period, which gave us a nine-year "window" through which to observe firms. Both new establishments that started operations during this period and previously existing firms that relocated operations were included in the analysis.

After deleting from the dataset the firms with incomplete or obviously erroneous information, there was still an impressively large number of firms–75,092–for which complete histories existed. The number of entering firms, by year of entry, is shown in Table 1.

The detailed analysis by industry and other groupings generally was undertaken for firms which entered in 1978 and 1982. The choice of these years was based on the point in the business cycle and the length of life which could be studied. The 1978 data allowed the longest time period for study and represented firms which entered the economy during an economic expansion. The 1982 entries represent firms which entered during a recession.

Overview

Firm lives were studied by determining the proportion which remained alive (economically active) for one through nine years. The analysis was conducted separately for firms which entered the Tennessee economy during each calendar year from 1978 to 1987. However, it was possible to study lives of firms only through 1987, so many d[illegible] have the potential to live a full nine years. For example, firms which entered in 1985 could be analyzed only for up to two years.

The percent of firms which survived each number of years is illustrated in Figure 1. Approximately 80 percent of the firms survive their first year in business and just over 60 percent survive their second year. About 50 percent live three years, and almost 40 percent survive five years. Approximately 30 percent last at least nine years.

The percent of firms which survive each number of years is reasonably stable, no matter what year the firms entered. This factor was examined by measuring the percentage of firms which entered in 1978 and survived various time periods. Similar calculations were done for each other calendar year of entry (i.e., 1979, 1980, etc.) Then the highest and lowest percentages of surviving firms were plotted for each year of duration (see Figure 2). The difference between the two lines is so small that a high degree of confidence can be placed in the findings for firm survival rates.

An alternative way to examine the duration of firms is to identify the percentage of remaining firms which fail during each year of life. This failure rate for each year can be thought of as the probability that a firm will fail in a certain year of life, given that it survived the previous number of years. The rate for the first year is determined by dividing the number of firms which fail during the first year of life by the total number of firms which began. The rate for the second year is calculated by dividing the number of firms failing during their second year by the number of firms which had survived the first year of life. The number is calculated in the same manner for all subsequent years.

TABLE 1
Firms by Year of Entry

1978	9,075
1979	7,356
1980	6,303
1981	6,888
1982	7,063
1983	7,820
1984	8,757
1985	9,365
1986	10,086
1987*	2,379
Total	75,092

*As of June 10, 1987.
Note: Firm lives were studied through June 10, 1987. The number of entrants through this date in 1987 appears low because the reporting process causes firm entrants to be identified with some lag.

FIGURE 1
Percentage of Firms Surviving

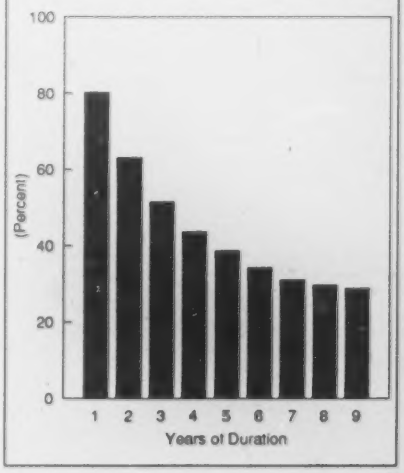


Figure 3 illustrates that failure rates are about 20 percent for each of the first three years. This means that about one out of every five remaining firms will fail in each of these years. It also is interesting to note that firms which survive their first year actually have a slightly higher chance of failing in their second year. This factor probably evidences that entrepreneurs seek to give a new business a reasonable time to succeed before deciding whether the project warrants further operation. Banks and other financing agencies also may allow firms one year. By their ninth year, the probability of going out of business is approximately one in eighteen.

There appears to be little difference in business duration, whether measured by success or failure rates at different points of firms' lives, based on the year when a firm *enters* business. This is true whether the firm entered business in an expansion or a recession. However, these rates do vary based on whether the firm *exits* in a recession or an expansion. Failure rates are higher for firms of all measured ages during the recession year than for firms exiting in the expansion year.

While the overall rate of firm attrition described above appears to be similar across the set of entrants from 1978 through 1987, detailed data analysis reveals a number of dissimilar firm duration patterns across industries and across size groupings of firms. Moreover, it is possible that firm duration varies across metropolitan and nonmetropolitan areas. Accordingly, we now turn to a more disaggregated analysis of the data.

Firm Duration by Industry

To investigate the possibility of industry, size-specific, and location-specific duration properties of Tennessee firms, we can examine a set of firms that began operation in 1978 (the earliest year of our data). This year provides the largest time window in which to observe differences, should they occur. For 1978, there were 9,075 entrants into the Tennessee economy which met the criteria for inclusion in this analysis. This is a large sample, representing over 12 percent of all entrants over the 1978-1987 time period. Of these entrants, the vast majority were very small. Of the total 9,075 entrants, 7,495 (or 83 percent) had fewer than five employees. Over 93

FIGURE 2
Percentage of Firms Surviving

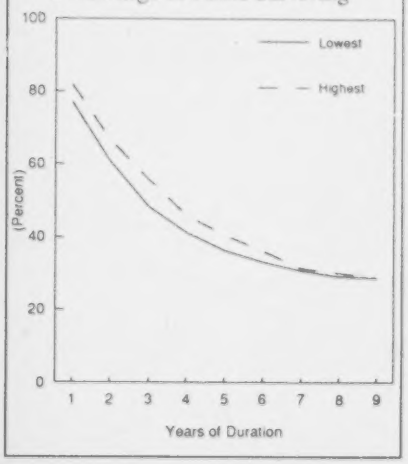
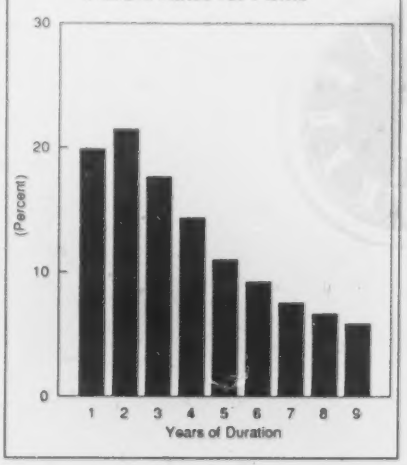


FIGURE 3
Failure Rates for Firms



percent of the 1978 entrants had fewer than 12 employees. While this pattern indicates a concentration of entry by very small firms for 1978, it is not dissimilar to the size distribution of entry during the overall 1978-87 period. Similarly, the distribution of 1978 entrants by industry, which appears in Figure 4, is also quite similar to the overall distribution of entrants by industry for the 1978-87 period. Three industries--Other Services, Retail Trade, and Construction--dominated the number of entrants. This trend continues for the entire sample period. Finally, the duration pattern for all 1978 entrants is quite similar to the duration pattern observed above. Specifically, the percentage of firms that survive declines in the same fashion as all entrants.

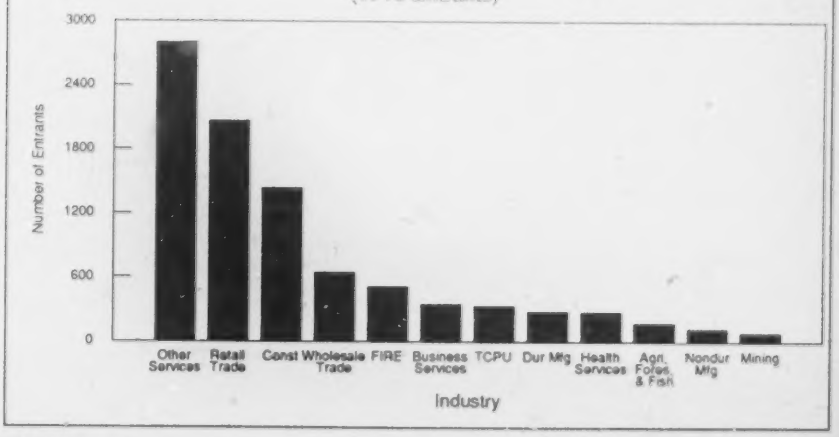
How the duration properties of firms vary across industries is another factor to be considered. The longevity of 1978 entrants in each of twelve industries is given in Table 2. The small set of firms that cannot be classified in any of these industries is not listed separately in the table but is included in the average. In the first column, the various industry partitions are listed. In the next eight columns are the percentage of 1978 entrants, by industry, that have survived n years, n=1...8. For example, in Agriculture, 86.78 percent of 1978 entrants survived at least one year from the entry date. (This calculation is made based on firms surviving full calendar years from their date of birth. That is, the first column is not the number of 1978 entrants to have survived until January 1979, but the number to have survived one full year since their entry date.)

A close inspection of Table 2 reveals that while there is considerable variation in the levels of firm survival over time across industries, the basic pattern of attrition is nearly uniform.

That is, the change in the percentages of surviving firms over time in any given industry depends upon the level of the percentage of surviving firms in that period. Specifically, the basic pattern of firm survival over time appears to parallel a number of phenomena found in biology, chemistry and physics that are subject to the *Law of Natural Decay*.

An interesting aspect shown in Table 2 is the variation in survival rates across industries: specifically, only 63 percent

FIGURE 4
Distribution of Entrants by Industry
(1978 Entrants)



of Mining entrants survived a single year, while at the other extreme, 91 percent of Health Services firms survived at least one year.

The rate of *all* 1978 entrants that survived at least three years was 51.64 percent. In Figure 5 we show industries with better and worse survival rates than the overall average. Firms in Mining, Construction, Retail Trade, and Transportation, Communication, and Public Utilities (TCPU) faced the highest three-years' attrition rate.

This pattern of diverse survival rates at each point in time for the various industries continues for the entire 1978-1987 period. By the eighth year, only 10 percent of 1978 Mining entrants have survived, while over 62 percent of Health Services firms remain in business. This variation suggests that the total economic benefit to a region from a new business will vary significantly, depending on the industry involved, since the expected life span of firms varies widely across industries. In this regard, observe that both durable and nondurable manufacturing have approximately average survival rates.

In addition, Table 2 shows that while the overall attrition pattern varies from industry to industry, the survival rates for a given industry are highly correlated over time. That is, industries with a high failure rate in initial years of operation are quite likely to have high failure rates in later years.

FIGURE 5
Survival Rates Relative to Average Survival
(1978 Entrants)

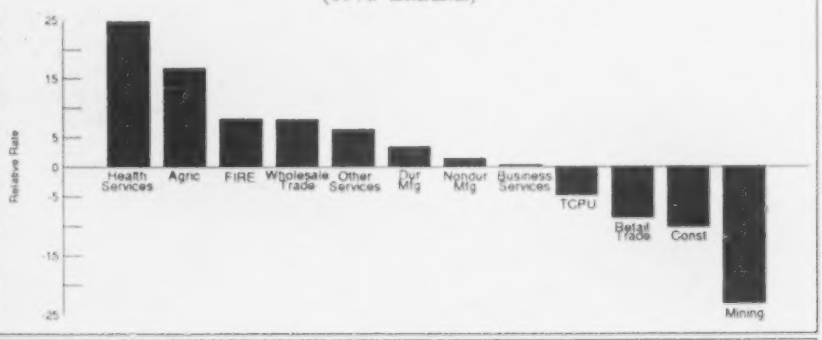


TABLE 2
Percent Survival Of 1978 Entrants (By Industry)

Industry	Years 1	2	3	4	5	6	7	8
Agriculture	86.78	72.41	68.39	59.20	54.02	50.00	45.98	41.95
Mining	62.96	41.98	28.40	22.22	17.28	16.05	11.11	9.88
Construction	76.22	54.04	41.35	30.26	25.17	22.52	20.15	18.55
Durable Mfg.	82.27	66.67	54.96	46.45	42.55	37.23	35.11	31.21
Nondurable Mfg.	76.92	59.83	52.99	47.86	45.30	41.88	39.32	37.61
TCPU	78.42	57.14	46.81	34.04	30.09	25.84	24.01	21.28
Wholesale Trade	85.76	69.95	59.62	49.14	45.54	41.78	38.97	35.99
Retail Trade	74.75	54.20	42.93	34.43	29.29	25.79	23.70	21.81
FIRE	89.04	70.25	59.69	45.79	38.55	35.23	32.29	29.94
Business Services	82.51	67.06	51.90	42.57	36.44	32.07	30.03	27.99
Health Services	91.27	82.18	76.36	70.55	67.64	66.18	64.36	62.55
Other Services	83.92	68.06	57.97	50.66	45.72	41.39	38.06	35.52
AVERAGE	80.48	62.42	51.64	42.60	37.69	34.03	31.37	29.10

While large firm survival rates are predominant over small firm survival rates over time, there is a great deal of variation in the small and large firm survival rates by industry.

Firm Duration By Size

Size-related aspects of firm duration are important because it is possible that survivorship rates differ significantly, depending on whether the firm is large or small. This dichotomy raises the difficult issue of what size constitutes a "small" firm. There is no commonly accepted cutoff. Figure 6 represents size distribution by employment of 1978-1987 entrants after two years in business. There we see that the vast majority of these firms are very small, with 81.5 percent having four or fewer employees, and 12.0 percent having between five and 11 employees. Since 93.5 percent of entrants over this period have fewer than 12 employees, we use this as a cutoff for the definition of a "small" firm. For the subsequent analysis, firms with fewer than 12 employees are classified as "small," while firms with 12 or more employees are "big." Because employment in the second year of business is used to measure the size of the firm, firms that survive more than two years may actually grow enough to change from small to large firms. Similarly, firms that are large after two years in business may become small with declining levels of employment in the following surviving years.

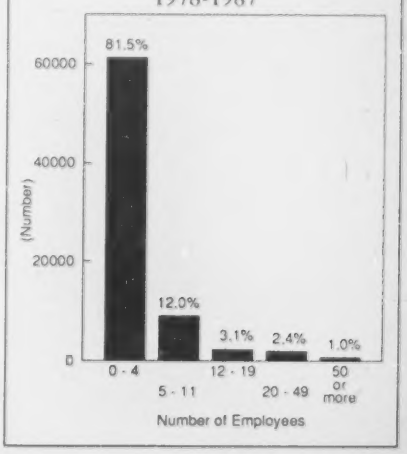
For 1978 entrants, 87 percent of large firms survive a full year, while only 80 percent of small firms survive one year. After the first year, survival rates between small and large firms become even more disparate. By the fifth year, 61 percent of large firms remain in business, while only 36 percent of small firms remain.

While large firm survival rates are predominant over small firm survival rates over time, there is a great deal of variation in the small and large firm survival rates by industry. At the industry level, shown in Table 3, it is still generally true that larger firm survival rates are higher than for small firms. It is interesting, however, to observe that Health Services firms comprise an exception to the general findings: specifically, those firms exceed the survival rates of large Health Services firms after the first year.

Firm Duration By Location

A final partition of the data examined is firm duration by location. This partition is important because a number of special concerns have arisen regarding the firm (and job) creation and retention properties of rural areas. Accordingly, we bifurcate the data into metropolitan and nonmetropolitan firms with the intent of discovering any overt differences in firm duration in metropolitan and nonmetropolitan areas. At the aggregate level, survivorship rates are higher for firms operating in metropolitan areas than in nonmetropolitan areas, although the differen-

FIGURE 6
Number of Entering Firms by Size
1978-1987



ces in overall survivorship rates are not that large. After the first year's experience (where the metro/nonmetro difference is about 2.5 percent), the difference in survivorship rates between metropolitan and nonmetropolitan firms is a roughly constant 4 percent.

While industry aggregate survival rates are not significantly different in metropolitan and nonmetropolitan areas, several interesting differences and similarities occur in specific industries. These differences and similarities can be seen in Table 4. Nonmetropolitan area survival rates are considerably higher for firms in Agriculture, Nondurable Manufacturing and Finance, Insurance, and Real Estate (FIRE). Conversely, metropolitan-based firms in the Construction industry have higher survival rates than their rural counterparts. Interestingly, for firms in Business Services and Health Services, metropolitan and nonmetropolitan survival patterns are very similar.

The pattern of firm survival in Tennessee is both stable and varied. The general pattern is stable in that regardless of when firms begin operation in Tennessee, approximately 80 percent of firms survive their first year

TABLE 3
Percentage Survival for Small and Large Firms By Industry
(1978 Entrants)

Industry	Size	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8
Agriculture	Small	85.07	67.16	62.69	52.24	45.52	41.79	37.31	33.58
	Large	92.50	90.00	87.50	82.50	82.50	77.50	75.00	70.00
Mining	Small	57.38	32.79	18.03	13.11	9.84	9.84	6.56	4.92
	Large	80.00	70.00	60.00	50.00	40.00	35.00	25.00	25.00
Construction	Small	75.20	52.11	39.30	28.05	23.02	20.58	18.58	17.17
	Large	92.77	85.54	74.70	66.27	60.24	54.22	45.78	40.96
Durable Mfg.	Small	79.83	62.23	48.93	39.91	36.05	30.04	28.33	24.89
	Large	93.88	87.76	83.67	77.55	73.47	71.43	67.35	61.22
Durable Mfg.	Small	75.00	54.76	47.62	40.48	38.10	34.52	33.33	32.14
	Large	81.82	72.73	66.67	66.67	63.64	60.61	54.55	51.52
TCPU	Small	77.71	56.37	45.54	32.17	28.66	24.20	22.29	19.75
	Large	93.33	73.33	73.33	73.33	60.00	60.00	60.00	53.33
Wholesale Trade	Small	85.53	69.76	59.35	48.62	44.88	40.98	38.05	35.28
	Large	91.67	75.00	66.67	62.50	62.50	62.50	62.50	54.17
Retail Trade	Small	74.03	52.95	41.41	33.09	27.82	24.34	22.34	20.44
	Large	83.23	68.94	60.87	50.31	46.58	42.86	39.75	37.89
FIRE	Small	89.25	69.98	59.03	45.03	37.93	34.69	31.64	29.21
	Large	83.33	77.78	77.78	66.67	55.56	50.00	50.00	50.00
Business Services	Small	82.08	66.04	53.63	40.88	34.28	29.56	27.36	25.47
	Large	88.00	80.00	68.00	64.00	64.00	64.00	64.00	60.00
Health Service	Small	90.91	82.58	76.52	70.83	67.80	66.67	64.77	63.26
	Large	100.00	72.73	72.73	63.64	63.64	54.55	54.55	45.45
Other Services	Small	83.85	67.59	57.24	49.82	44.83	40.54	37.14	34.55
	Large	86.21	82.76	80.46	77.01	73.56	67.82	66.67	65.52
AVERAGE	Small	80.02	61.39	50.31	41.13	36.15	32.52	29.92	27.73
	Large	87.48	77.95	71.60	64.73	60.67	56.61	53.09	49.74

of operation, and just over 60 percent survive their second year. Only one-half of all new entrants into the Tennessee economy survive three years. Thus, attrition rates are quite high in the early years of a firm's operation, and as firms age, their risk of failure in coming years decreases.

However, while the general *pattern* of firm duration is quite stable, the *levels* of survivorship vary considerably across both industries and size categories. Firms in Health Services, Agriculture and the FIRE industries had the highest levels of duration, while firms in Mining, Construction and Retail Trade were found to have the shortest lives.

Small firms were found to have lower survivorship rates (shorter lives) than large firms. There are, however, differences across industries. For instance, we found that small firms in the Health Services industry had *higher* firm survival rates than did their larger counterparts. Large differences between metropolitan and nonmetropolitan firm longevity was not detected, though there were some industry-level differences. ■

TABLE 4
Survival Rates By Location And Industry
(1978 Entrants)

Industry	Location	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8
Agriculture	Metro	82.43	60.81	56.76	48.65	43.24	37.84	36.49	33.78
	Nonmetro	89.90	80.81	76.77	66.67	61.62	58.59	52.53	48.48
Mining	Metro	73.91	47.83	34.78	26.09	21.74	21.74	17.39	13.04
	Nonmetro	56.60	37.74	28.30	22.64	16.98	15.09	9.43	9.43
Construction	Metro	76.82	56.23	44.14	31.94	26.88	24.54	22.32	20.72
	Nonmetro	75.00	50.00	37.30	29.88	24.41	20.90	18.55	16.80
Durable Mfg.	Metro	86.92	70.77	54.62	48.46	43.85	38.46	36.15	32.31
	Nonmetro	78.32	62.94	55.94	45.45	42.66	37.06	34.97	30.77
Nondurable Mfg.	Metro	79.73	58.11	48.65	41.89	39.19	33.78	32.43	31.08
	Nonmetro	72.50	65.00	62.50	60.00	57.50	57.50	52.50	50.00
TCPU	Metro	79.89	59.78	50.00	36.96	32.61	28.26	27.17	22.83
	Nonmetro	81.82	59.50	47.93	33.88	30.58	25.62	22.31	21.49
Wholesale Trade	Metro	85.43	69.75	59.38	50.98	47.34	43.14	40.06	37.25
	Nonmetro	87.27	71.82	61.82	48.18	44.55	41.82	40.00	35.45
Retail Trade	Metro	73.73	53.19	41.49	33.47	28.07	25.20	23.49	21.69
	Nonmetro	76.34	55.58	44.78	35.68	30.83	26.46	23.79	21.72
FIRE	Metro	89.00	69.00	57.75	43.75	36.50	33.00	30.25	28.25
	Nonmetro	88.30	75.53	68.09	55.32	47.87	45.74	41.49	38.30
Business Services	Metro	82.78	67.77	52.38	44.32	37.36	32.60	30.77	28.57
	Nonmetro	79.07	65.12	51.16	39.53	34.88	30.23	27.91	27.91
Health Services	Metro	91.53	82.01	75.13	70.90	68.25	66.67	66.14	64.55
	Nonmetro	90.59	83.53	80.00	70.59	67.06	65.88	61.18	58.82
Other Services	Metro	84.32	69.29	59.55	52.61	47.81	43.69	40.13	37.66
	Nonmetro	81.74	63.65	52.70	44.70	38.96	33.91	31.30	28.52
AVERAGE	Metro	81.20	63.70	52.87	44.28	39.25	35.69	33.12	30.89
	Nonmetro	78.75	59.70	49.45	40.37	35.42	31.40	28.52	26.16

ECONOMIC DEVELOPMENT INCENTIVES AND THE TENNESSEE VALLEY ECONOMY*

by Matthew N. Murray

In order for state and local governments to use policy effectively to encourage growth and development, policymakers must be aware of the range of policy instruments at their disposal and must have some understanding of whether such policies have been or can be effective.

Economic development incentives are an important component of the development program of virtually every state and local government within the Tennessee Valley. Incentives and broader government policies can be used to divert resources to their most productive use, thus enhancing economic efficiency and growth. Public policy can also serve as the mechanism whereby society can pursue broader development goals related to equity and the quality of life. In general, appropriately designed and implemented policies have the capacity to facilitate both economic growth and economic development, providing the means for dealing with problems not addressed adequately by the market. On the other hand, poorly designed and implemented policies can act as impediments to growth and development.

The role of federal government policy in regional economic development activities has declined precipitously over the course of the last decade. The withdrawal of federal assistance reflects, in part, the view that markets can perform most effectively in the absence of public sector intervention. More limited federal involvement also reflects the view that federal assistance serves simply to reallocate the location of economic activity, rather than create new economic activity. For example, federally sponsored enterprise zones may prosper, but may do so at the expense of unassisted regions.

State and local governments are actively involved in promoting economic development through general policy, various planning efforts and specific incentive programs (e.g., industrial training

*This article is excerpted from a monograph by the same title published by the Center for Business and Economic Research in June 1990.

services, loan programs and technical assistance for entrepreneurs). The extensive use of incentives creates significant competition across various units of government (e.g., counties or states) in the quest to attract economic activity. Other resources are expended to promote grassroots growth. These actions reflect a continuation of existing activities as well as an attempt to fill the void created by a reduced federal role. Yet, beyond anecdotal evidence, surprisingly little is known about the effectiveness of development incentives.

In order for state and local governments to use policy effectively to encourage growth and development, policymakers must be aware of the range of policy instruments at their disposal and must have some understanding of whether such policies have been or can be effective. Policymakers must also have a framework for analysis of incentive utilization, must be aware of the positive and negative aspects of economic development, and must recognize that trade-offs exist in the use of policy (or may be introduced by policy itself). The complete report from which this synopsis is drawn explores these issues in greater detail for the Tennessee Valley region, which includes the entire state of Tennessee and portions of Alabama, Georgia, Kentucky, Mississippi, North Carolina and Virginia.

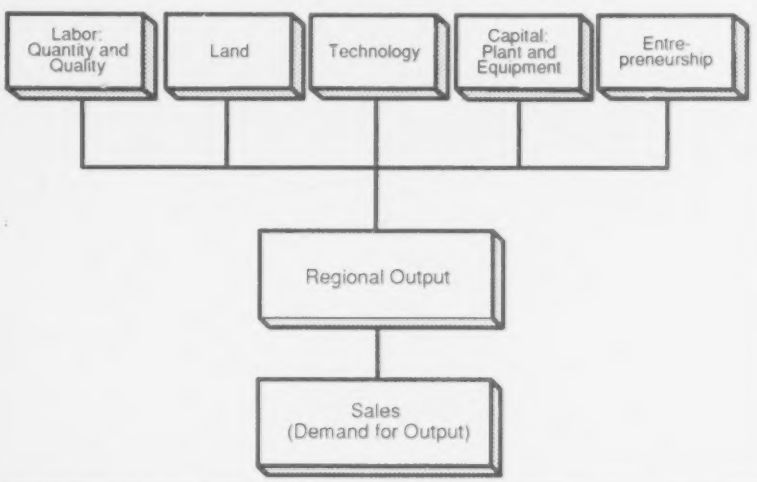
A Framework for Analysis

A formal framework is essential to the coherent design, implementation and evaluation of development policy. One useful framework is the economist's production function. In the context of a regional economy such as the Tennessee Valley, the output of goods and services is determined by the level and mix of various inputs used in the production process (e.g., labor and raw materials) and the state of technology. In this framework, both the quantity and quality of outputs can be envisioned as being produced with various inputs. The inputs also possess important quantitative and qualitative dimensions that determine what is produced and the way products are produced. For example, the availability of labor may be less important than the quality of the labor force. Similarly, although the presence of certain forms of infrastructure, such as transportation networks, is important to production, the transportation network's reliability and diversity are also of key importance.

A schematic depiction of the production function classification scheme is presented in Figure 1. The five input components of the production relationship--labor, land, technology, capital, and entrepreneurship--are combined to produce regional output, which is in turn sold within and outside the region.

The production function makes explicit the factors which influence economic growth and development: the level and quality of inputs and the state of applied technology. It also focuses attention on output, since increasing output and hence, sales, typically requires more inputs. It is in this context that the production function can provide policy insights. For example, policies to increase regional production could focus on the output component of the production function via sales promotion (e.g., export subsidies or promotional campaigns). Alternatively, policy could focus on the input side of the production relationship through increasing input availability or by making inputs less expensive via input subsidies (e.g., jobs tax credits); and policy also might be designed to improve the quality of certain inputs (e.g., labor force education). The production function also may provide the framework wherein a determination can be made as to whether slow economic development is the result of inadequate demand for a region's products, poor use of an area's resources (as might be evidenced by unemployment), or inferior quality inputs. This framework is used below to categorize and summarize incentives in use throughout the Tennessee Valley.

FIGURE 1
A Regional Production Function



Incentives and the Valley Economy

The spectrum of state and local economic development incentives and initiatives is quite broad, ranging from regional development consortiums to state export promotion, to subsidized day-care, to specific tax incentives. Equally diverse are the variations in the application of seemingly similar incentives. For example, Mississippi state law enables local governments to provide outright property tax abatements. In other states, like Tennessee, reduced property tax liabilities can be extended to industry through the use of industrial development bonds (IDBs) only in certain instances. Significant variations also exist across state and local governments in the extent of direct public sector involvement in providing incentives. For example, in Georgia, the (private) Business Development Corporation draws upon the resources of stockholders and member financial institutions to screen and provide loans. In other states, like Kentucky, direct loans from the state may be made to eligible businesses through the Kentucky Development Finance Authority.

In the discussion that follows, the production function framework presented above is used as an organizational scheme for categorizing incentives. Incentive programs are, with few exceptions, placed in this taxonomy on the basis of their initial impact on a component of the production function. For example, export promotion campaigns (e.g., foreign trade missions) may lead directly to increased sales and hence to output. As a result, such policies are categorized under the heading "sales" (or demand). However, one must recognize that export promotion policies likely have an effect on the input side as well. For example, to increase production and output, additional workers may have to be hired. Alternatively, existing workers may be employed more intensely through overtime, which leads to income gains. Further ramifications might include impacts on transportation facilities, tax revenues, and so on.

Other incentive programs may serve to influence production inputs or technology. For example, enterprise zone programs frequently provide specific incentives for job creation. The initial im-

pact of such a policy is on the level of labor employment, and as such, the policy would be categorized as a labor employment incentive. Again, it should be recognized that other impacts might result indirectly.

Sales and Demand Incentives and Initiatives

Most states in the region and across the U.S. engage in sales promotion and marketing campaigns, including domestic and international trade shows. Others maintain formal trade offices abroad or in other regions of the country or keep representatives on retainer. Trade representatives serve to inform nonresidents of the products produced in-state and also promote reverse investment (i.e., investment from abroad). More direct technical assistance is frequently provided to business firms seeking to exploit out-of-state markets through seminars, conferences and other mechanisms. Direct financial assistance to exporters is extremely limited in the Valley region, with only Tennessee providing assistance in the form of limited subsidies to firms engaged in promotional activities. A number of the Valley states--Alabama, Kentucky, Mississippi, and Tennessee--are members of the Mid-South Trade Council. (Arkansas and Louisiana are also members.) This is a loose-knit organization wherein members cooperatively sponsor trade missions and exchange information. Frequently, a single Mid-South Trade Council "booth" is used in trade shows to provide information on all member states. The organization has no formal budget; its member states pay no dues; and it is designed to economize on promotion costs.

In addition to these activities, states, local governments, chambers of commerce, and other development organizations engage in various trade promotion and marketing programs, including the promotion of tourism and the marketing of products and resources across the country.

Available sources indicate that there are no export finance programs at the state or local levels in the region. Two basic models of export finance programs are used in other states. In California, the state provides loan guarantees and helps in filing loan applications for small- to medium-sized export firms; however, the loan funds themselves must be derived from private sector financial institutions. The alternative model, in place in Illinois and a number of other states, provides export finance through bond issues. In Illinois, bonds are issued by the Export Development Council, and proceeds are used to provide loans to small- and medium-sized firms. Interest rates on these loans are above prime.

Labor Incentive Programs

Labor resources are an important ingredient to the production process, both in terms of quantity (the level of employment) and quality (educational attainment and job skills levels). Unfortunately, the Valley states are known for low levels of spending on primary and secondary education and relatively low levels of educational attainment. Historically, the large size of the labor pool in the Valley has provided the basis for significant regional growth, being utilized extensively by branch-plant and other manufacturing concerns. However, because of demographic trends, future growth in the Valley's labor force cannot be expected to be the source of growth it proved to be during the 1950s and 1960s. As a result, every effort must be made to mobilize the region's work force by facilitating labor market participation. In addition, the quality dimension of labor (in terms of educational attainment, job skills and worker versatility) will become an increasingly important ingredient to growth.

Development initiatives related to labor can be summarized in terms of their effect on employment (quantity) and training (quality). In addition to these two dimensions, labor quantity or employment initiatives can be further separated into labor demand policies and labor supply policies. Demand-oriented policies are designed to increase the firm's demand for workers. Supply policies seek to encourage individuals to participate in the labor market.

Direct incentives to increase labor demand and employment are relatively widespread. In Alabama, Georgia, Mississippi and North Carolina, tax credits or exemptions are provided to employers for job creation. Additional state-level job creation incentives are frequently components of enterprise zone programs which are in place in Alabama, Kentucky, Mississippi, Tennessee and Virginia.

As widespread as direct employment incentives are, more common are programs that seek to expand the demand for labor, and hence employment, indirectly through various forms of capital subsidies. For example, in Georgia, the use of industrial development bonds (IDBs) is contingent upon the number of new jobs created; in Kentucky, loans through the state depend in part on the job creation aspects of the program; and in Virginia, as well as many other areas, loans and other forms of assistance are targeted to areas of high unemployment. At the local level, it is not uncommon for the price of industrial park land or access to other local resources to be dependent upon jobs created.

Increasingly popular programs, promoted as the means to increase labor force participation (i.e., the supply of labor), are state and local activities related to day-care. Perhaps the most aggressive regional actor in this respect is the Commonwealth of Virginia, where there is a State Department for Children. The Department promotes private sector involvement in day-care provision and has considered permitting the use of grants and other forms of financial support, tax incentives and technical support (e.g., planning) to induce their availability. In Tennessee, the state has released a compendium of certified day-care centers, and a new Child Care Loan

Guarantee program will assist in the establishment of day-care facilities.

All states in the Valley provide extensive industrial training services, and the states will frequently provide training at no cost to employers or employees. In many cases, existing community college or vocational-technical facilities are used. In Alabama, mobile facilities can provide specific forms of industrial training; and in other cases, training is provided on the job site. Industrial training in the past has tended to be targeted to new workers. However, training is increasingly provided to the existing work force in recognition of the importance of job retention and the need to address the dislocative effects of structural and technological change. It is also more common to observe the provision of training services to nonindustrial businesses, as well as basic literacy assistance as needed.

Local training efforts are more limited and difficult to identify. It is not uncommon for community college and vocational-technical facilities to provide programs independent of state initiatives. Literacy training and GED equivalency programs are also dispersed throughout the region. The Knox County, Tennessee, Chamber of Commerce has even hired a Director of Industrial Training to oversee local activities. Additional local discretion exists in the context of the federally assisted Job Training Partnership Act (JTPA) program.

Land Acquisition and Land Development Incentives

Policies designed to increase land utilization can be separated into two areas: programs designed to directly reduce site acquisition costs and programs intended to provide assistance (primarily to local governments) for the purpose of developing land to accommodate business and industrial activity.

State government agencies, local development boards, planning authorities, and chambers of commerce all help business firms (typically industrial) identify potential sites and thus reduce search costs. State and local governments also frequently have loan programs that can be drawn upon to finance site acquisition. For smaller projects, revolving loan funds may be available. For larger projects, other loan programs are available for specific uses. The major loan programs have two general forms. First are programs such as those in Georgia and Kentucky, where loans may be secured directly through a formal state agency. In other cases, the state plays a less direct role, acting as a catalyst by providing seed money for loans (which require private-sector matching) or by providing loan guarantees for loans obtained from the private sector.

Most other site acquisition incentive programs tend to be local in nature. For example, local discretion may frequently be exercised in providing additional incentives within enterprise zone areas, although such flexibility requires authorization through state law. Free land, low-cost land, and industrial park access are also important local incentives which are used extensively throughout the region. The Greene County Foundation, a private, nonprofit organization in Greene County, Tennessee, uses the proceeds of a stock issue to purchase land and hold it for development purposes with the intent of controlling land prices.

More extensive direct state and local government assistance is provided for site development, probably in recognition of the public sector's obligation to provide transportation networks and utilities access. In many instances, outright grants are provided to local government units to provide basic infrastructure support for specific business concerns. Low-interest loans are also common as a means of providing site development support.

Technology Initiatives

The Valley states are actively involved in various technology initiatives, including the provision of technology development incentives. The motivation for such programs cannot, in most cases, lie in terms of their direct effects on job and income retention and creation, since these effects typically are not pronounced. Rather, technology incentives are pursued in the hope of reaping significant indirect benefits in terms of image and prestige, as well as in terms of increased productivity across sectors and multiplier effects. That is, the extensive use of new technologies in various industries has the capacity to raise productivity in all industries. Moreover, these productivity gains may ripple through the economy, providing extensive expansions in production and individual earnings.

The states, as opposed to local governments, have tended to take the lead in technology development policy, reflecting the fact that the benefits of most technological advancements spread beyond the local level. (Similarly, federal support for research and development is argued necessary because of spillover benefits across states.) However, the extent of state involvement in research and development (R&D) is subject to variation. For example, in Mississippi, most resources are targeted towards technology transfer programs. In North Carolina, more extensive resources are targeted to basic R&D.

State technology programs also vary in the extent of direct public sector financial involvement. In Tennessee, the state sees itself primarily as a catalyst and attempts to promote technology development by building on existing strengths: the Biomedical Research Zone in Memphis, the Tennessee Valley Aerospace Region (utilizing The University of Tennessee Space Institute facility and network), the Knoxville Technology Corridor (utilizing The University of Tennessee at Knoxville, the Oak Ridge National Laboratory, and the Tennessee Valley Authority facilities) and other initiatives. In other states, like North Carolina, the state is more actively involved in terms of direct support for new

technology initiatives. The latter approach is more consistent with the extensive efforts of Ohio (Thomas Alva Edison Partnership Program) and Pennsylvania (Ben Franklin Partnership Program), which seek to create new advantages and hence promote technology development in specific areas.

Enterprise zone programs have been used to promote research and development in various parts of the Valley, although not extensively. The Biomedical Research Zone is a designated Tennessee enterprise zone. In Mississippi, enterprise zone incentives can be applied to firms involved in high technology upon approval by the state.

All states in the region are involved to some extent in facilitating the transfer of technology. Some of these programs attempt to commercialize basic research, as is the case with the Tennessee Aerospace Corridor and The University of Tennessee Space Institute. Other programs, such as the new Alabama Center for Advanced Technology Transfer, provide broad training support to allow workers to cope better with new technologies and processes. Manufacturing technology transfer programs like the Manufacturing Modernization Program in Alabama are also common. Transfer programs are particularly important because of the region's manufacturing orientation and the sensitivity to international and domestic competition. Other forms of technology assistance common in the region include extensive technical and networking support, technical parks and incubators. Less common are grants and loans and forms of seed capital.

Incentives for Plant and Equipment

New private sector investments in capital facilities and equipment can be an important source of productivity growth, since new capital frequently embodies new technologies and production processes. New capital investments can also be an important source for direct job and income creation; indirect growth in the number of jobs and income also may arise through the multiplier process. Three different types of capital are typically afforded some form of incentive: equipment and machinery, structures, and pollution-control equipment.

Industrial equipment and machinery purchases are frequently provided sales tax exemptions, limits (e.g., an $80 maximum on single-item purchases in North Carolina), or special sales tax rates. Less frequently, these same privileges are extended to nonindustrial equipment.

Other incentives offered across the region include those associated with enterprise zone programs, property tax abatements and accelerated depreciation. Loan, grant and bond finance programs are commonly available at different levels of government and through private bodies. Structural investments can draw upon a wide array of financing options across the Valley states. Extensive bond finance programs are offered in all states, with most activity at the local level. Additional state and local loan/grant programs are frequently available, most of which have been designed for and used by manufacturing concerns. However, many are now being extended to nonmanufacturing concerns in recognition of the importance of other sectors of the economy.

Mississippi's involvement in incentive programs to stimulate structural investment is perhaps the most extensive among all the southeastern states. State and local bonds (both taxable and nontaxable), state loans and grants, and state notes and general obligation bonds can all be used to finance structural investments. North Carolina's involvement is also notable because of its use of state pension fund resources as the basis upon which rural loans are provided through the North Carolina Enterprise Corporation.

Incentives for Public Capital Formation: Infrastructure

Infrastructure includes such things as roads, bridges, and utilities--the provision of which has historically rested with the public sector, whose role is to

provide basic and necessary services and facilities in order to accommodate and facilitate economic growth. Because many types of infrastructure are provided by the public sector, as opposed to the private sector, development incentives typically extend from higher to lower levels of government, rather than from the public to private sector.

Primary forms of state assistance available for financing local infrastructure projects are loans and grants, and the loan programs frequently provide for below-market interest rates. In addition to broad state-level support for general infrastructure projects, many states have programs to serve specific infrastructure functions. For example, specialized road finance programs are in place in Mississippi and Virginia. In addition, Virginia has a railroad development program, although it is intended to help industrial concerns and could appropriately be categorized under site-development assistance.

Encouraging Entrepreneurial Activity

Entrepreneurship, one of the most important inputs to the production process, refers to the individual who takes business risks on his or her own behalf, using own-time and own-resources. While the role of the entrepreneur has always been important, it has become increasingly visible as the average size of business firms has declined and new firms have begun to provide many of the new jobs.

State and local policies can impact extensively on two dimensions of entrepreneurial activity. First, support can be provided directly by the public sector or induced indirectly by public sector initiatives that will give the individual appropriate basic skills (e.g., reading and reasoning) and technical/management skills that will allow creativity to take its course. Second, financial support may be necessary to catalyze individual ideas. Many argue that existing financial institutions are inadequate as a source of seed money for entrepreneurial activity, particularly in rural areas and inner cities.

Technical assistance programs for entrepreneurs are quite widespread at both the state and local level. At the state level, university systems frequently provide extensive assistance programs, as is the case with Small Business Development Centers in Alabama, Kentucky, and North Carolina. The state may also play a role in small business programs, as is illustrated by the Small Business Office of the Tennessee Department of Economic and Community Development. Less centralized support programs often operate out of community college and vocational/technical schools. Existing business and industry may also play an important role in networking and resource identification through trade organizations and chambers of commerce. Incubators are an additional support mechanism, although technical assistance varies extensively across incubator facilities. Finally, small firms engaged in basic research or commercialization efforts can draw upon a wide array of technology-specific support services, such as those offered by Alabama's Office for the Advancement of Developing Industries.

Financial support for general entrepreneurs is much more restricted than is financial support for manufacturing, which is often provided to attract economic activity rather than to alleviate financial market imperfections. Financial assistance for entrepreneurs is typically justified on the basis of financial market imperfections. Bonds, loans, grants, and loan guarantees are available, with considerable variation, throughout the Valley, but their use is limited. Local venture capital programs and revolving loan funds (with interest rates above prime) are fairly common, but availability is inconsistent even across larger geographic areas.

Raw Materials, Intermediate Goods, Inventories, and Energy

State and local sales, property and inventory taxes are often imposed on raw

inputs, intermediate goods, and inventories. The tax structure within a state frequently embodies different tax rates on different inputs, and differential tax rates can frequently encourage businesses to use specific production processes and lower tax liabilities.

The range of special tax treatments afforded to these inputs and products in the Valley is extensive. However, in general, there are no direct subsidies or other financial inducements available for input usage; loan, bond, and grant programs may not typically be used as sources of working capital. Sales tax exemptions are most common for direct inputs to the production process, inputs that are in some way transferred and embodied in the final product. Also common are property tax and/or inventory tax breaks for inventories and goods in transit. These act as a stimulus to trade and warehousing. Enterprise zone incentives are most comprehensive and include extensive exemptions and abatements. The logic is again to facilitate trade and encourage agglomeration.

Public Policy and Economic Development: Can Incentives Work?

Development policies and incentives may serve two broad roles. First, they may be used to overcome various market imperfections that interfere with the smooth functioning of markets. Second, they may be used to improve a regional economy via the competitive use of incentives. Each of these roles is discussed in turn below.

First, consider policy in the context of market failure. Two of the most common forms of market failure relevant to economic development are benefit spillovers and inadequate or costly information. Education and technology development are examples of activities that may generate benefit spillovers. Better educated individuals are typically more productive and presumably offer many benefits to society, including being better citizens. Generally, individuals are rewarded for increased productivity through higher earnings; however, there is typically no compensation extended to the better educated in reflection of improved citizenship. As a result, the private returns to education (i.e., one's earnings) fall short of the societal returns to education. Since the individual's decision to go to school is based on private returns, some choose not to secure additional education and society suffers from inadequate investments in "human capital." Broad policies (such as mandatory school attendance) and incentives (e.g., financial assistance for college students) may be used to encourage investments in education. Technology development is quite similar. A firm may invest in research and development to earn higher profits for itself. However, technology development may provide spillover benefits through the diffusion of technology across the economy. Because the individual firm fails to take these spillover benefits into account, too little may be invested in research and development, with society bearing the costs of this underinvestment.

Technology transfer and financial market imperfections may result from costly or inadequate information. For example, firms may be unaware of new production technologies and may not have the resources to identify and acquire new facilities and equipment. Government programs might be employed in this situation to fill information gaps, provide technical support, and perhaps provide direct or indirect financial support. Financial market imperfections may result if loan officers have imperfect information regarding the merits of certain specific loan applications. In some cases, meritorious loan applications may be rejected, interfering with the efficient flow of financial resources. The public sector may choose to provide certain forms of loans, though this scenario would assume the public sector has a better capacity to screen loans. Other forms of assistance might include public sector loan guarantees or preferential tax treatment for private sector contributors to private sector-administered loan pools.

In general, policies that seek to address market failure have the potential to increase regional growth as well as national growth. Thus, one region's activities need not have a negative impact upon another region. For example, programs designed to encourage savings and investment, technology development, and investments in education can enhance both regional and national growth and development.

The second role of development policy should be considered in the context of the competitive use of incentives. Extensive use of economic development incentives to attract and create economic activity has given rise to interjurisdictional fiscal competition, or the competitive use of tax structure and incentives by state and local governments to attract and retain workers and firms. In such instances, policy makers are not attempting to alleviate a "failure of the market," but are simply trying to increase their region's slice of the economic pie. Whether this competition is, in general, beneficial or detrimental to national, state and local economies is a matter of some concern, ranging from the federal government's fear that intergovernmental assistance to state and local governments encourages wasteful competition, to the local concern that concessions and incentives provided to the business community will compromise the ability of the public sector to provide necessary public services to individuals. Alternatively, some have argued that such competition serves the same purpose as competition in the market: the promotion of efficiency. (Enhanced efficiency implies that there may be net gains for governments engaged in competition.)

Unfortunately, it is impossible to justify many uses of incentives on the grounds of market failure. Instead, the use of incentives must be justified on the grounds of equalizing differences in tax

rates created by "other" jurisdictions, improving the perceived or actual business climate, or simply reducing the cost of doing business to increase a region's slice of the economic pie. Since incentive utilization cannot be justified fully on the basis of market failure, an implicit–if not explicit–consensus has emerged among economists and other analysts that interjurisdictional fiscal competition is largely a zero-sum game, at least in terms of location effects on economic activity. That is, while one region may capture economic activity through incentive utilization, it will likely be at the expense of another region. In essence, many incentives simply serve to reallocate economic activity rather than create new economic activity.

Do Incentives Work?

There has been little careful analysis of the effectiveness of economic development incentives. However, there appears to be a consensus on the effectiveness of a limited number of programs.

Tax and Expenditure Structure. State and local taxes and expenditures are typically based on a region's demand for public services rather than as a means to stimulate development. Most studies have found that this general tax and expenditure structure exerts either little or no impact on the location and growth of economic activity. Since tax costs comprise a very small fraction of most firms' geographically variable costs, the findings suggest that tax incentives (i.e., deviations from the existing tax structure) for plant and equipment, raw materials and other inputs have little effect on where individuals and firms locate and where growth takes place. Policies of this type, frequently employed for competitive reasons, likely exert a pronounced influence only when a government's tax structure or incentive programs are significantly different from those of surrounding jurisdictions. However, even in this context, it is not clear that tax incentives are a cost-effective policy tool.

Infrastructure. There is little, if any, evidence to support the contention that economic growth is generated because of infrastructure development, improvement or expansion. Instead, infrastructure is viewed as a crucial accommodating force for economic growth and an important complement to private sector investments. The use of infrastructure as a development tool will be most effective when other ingredients to growth are present and when the absence of infrastructure acts as an impediment.

Grants, Loans and Industrial Development Bonds (IDBs). Economic Development Administration grant and loan programs, targeted to distressed regions largely for equity reasons, have been shown to positively influence income and employment growth. However, there is some question as to whether or not growth is sustainable in the face of the subsequent withdrawal of federal funds. In addition, the studies yielding these results have failed to address the possibility that federal assistance has caused distressed regions to benefit at the expense of better-off regions.

State loan programs, frequently cited as a solution to financial market failure, have experienced mixed results in encouraging employment and income growth. To be effective, these programs should be aimed at narrow market segments where financing gaps exist, and they should be run by the private sector.

Evaluation of the economic stimulus attributable to IDBs has also varied. Some find that IDB issuances have a positive impact on the economy and others find no impact. Caution must be exercised in interpreting the results, suggesting a positive impact since there was no attempt to control for the substitution of employment in one place at the expense of another or the substitution of IDB financing for private sector financing.

Education and Training. Perhaps the strongest case to be made relates to education and training programs. Job training and job search assistance (for example, through the Comprehensive Employment and Training Act (CETA) and various welfare programs) has been found to provide significant earnings (and hence productivity) benefits for women with little labor market experience and certain minorities. The employment and earnings prospects for men are not typically enhanced. Worker retraining programs also have shown promise in alleviating the dislocative effects associated with technological change. These programs should be of great value in the Valley, since the education level of the existing workforce is low and since the manufacturing sector is in transition. However, because of the mixed results for the existing Job Training Partnership Act (JTPA) program, its predecessor, CETA, and other manpower training programs, any training program must be carefully designed and implemented.

Basic education at the primary and secondary level is highly correlated with individual earnings and productivity and may have close ties to the likelihood of entrepreneurship. Education also has been shown to be important as a historical source of economic growth.

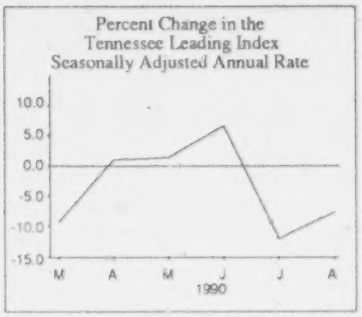
Technology. Research has clearly illustrated the general importance of technology development to national and regional economic growth. Unfortunately, beyond this broad assessment, the exact mechanism by which technology influences growth is not clear. However, given the resources and needs of the Tennessee Valley, programs to transfer existing technologies to important industries may have greater merit than basic research and development efforts. To the extent they occur, basic research and development efforts should be focused in areas where particular expertise exists and where any contributions can lead to enhanced production in the Valley. ■

TENNESSEE ECONOMIC OVERVIEW

(August Index as of October 17, 1990)

Tennessee's index of leading economic indicators fell in August at a seasonally-adjusted annual rate (SAAR) of 7.6 percent. It was the second straight month of decline in the index. The August figures provide a first glance at the initial impact of the Iraqi invasion of Kuwait on the U.S. and Tennessee economies. The U.S. index of leading economic indicators, a crucial component of the Tennessee leading index, fell off sharply in August at a 13.8 percent SAAR. This decline was not unexpected. Even prior to the Iraqi invasion, the U.S. economy had entered a stagnant period; meager gains in real GNP were posted in the second quarter of this year, and the July leading index showed no change over June. Fears of an impending recession prior to the invasion intensified as the Middle East crisis brought a surge in oil prices and increased uncertainty. The recent budget impasse, with the eventual likelihood of tax hikes and spending cuts, have contributed further to expectations of a recession.

In addition to the U.S. leading indicators, two other components of the Tennessee leading index displayed significant weakness in August. Inflation-adjusted taxable sales fell for the fifth time in the last six months. Initial claims for unemployment insurance rose for the second month in a row, to 48,800, which is very high relative to recent months. The remaining two components of the leading

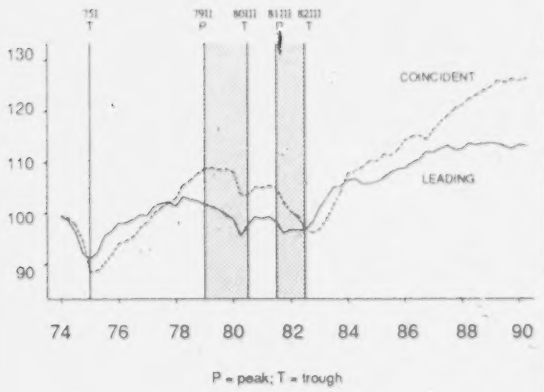


index helped cushion the August decline. Total construction starts, while decreasing over the previous three months, increased in August. Inflation-adjusted taxable mortgages, after declines in June and July, rose in August. It is interesting to note that all five of the measures which constitute the leading index are down from August of last year. Overall, the August leading indicators, particularly in light of recent events, suggest a pessimistic outlook for the Tennessee economy six to nine months ahead.

The Tennessee index of coincident indicators fell significantly in August after gains in June and July. All three components of this index contributed to the drop. After five straight months of increase, Tennessee commercial and industrial electrical consumption fell dramatically in August. The Memphis help-wanted index also decreased substantially. Finally, the sluggishness of the national economy prior to and immediately after the Iraqi invasion is made more apparent in the U.S. coincident indicators index, which decreased in July and August by 2.6 percent and 6.1 percent, respectively, at SAARs.

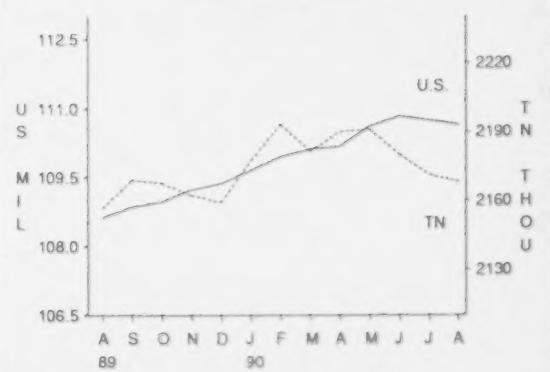
Labor markets in Tennessee continued a downward trend in August, as seasonally-adjusted nonagricultural employment fell for the third straight month and manufacturing employment fell after a slight gain in July.

FIGURE 1
Coincident and Leading Indexes



P = peak; T = trough

FIGURE 2
Total Nonagricultural Employment
Seasonally Adjusted



Note: Calculated from data provided by the Tennessee Department of Employment Security.

TENNESSEE ECONOMIC INDICATORS
Seasonally Adjusted

	8/89	9/89	10/89	11/89	12/89	1/90	2/90	3/90	4/90	5/90	6/90	7/90	8/90	1987	1988	1989
US Personal Income (BIL 82 $) (1)	3533.1	3534.9	3541.5	3553.3	3560.3	3549.1	3555.4	3564.5	3566.6	3574.2	3569.8	3574.5	3557.2	3311.2	3439.2	3534.9
% Chg Prev Month SAAR	0.14	0.63	2.24	4.07	2.41	-3.72	2.16	3.13	0.70	2.57	-1.47	1.60	-5.85	3.02	3.87	2.78
% Chg Same Month Last Yr	2.36	2.31	1.44	2.59	2.25	1.09	0.74	0.56	0.88	1.56	1.32	1.18	0.68	3.02	3.87	2.78
US CPI,All Urban Consumers (1982-84=100)	124.5	124.8	125.4	125.8	126.1	127.7	128.3	128.9	129.1	129.3	130.0	130.5	131.5	113.7	118.3	124.0
% Chg Prev Month SAAR	0.00	2.93	5.92	3.90	4.88	14.14	5.79	5.76	1.88	1.87	6.69	4.71	9.59	3.67	4.06	4.80
% Chg Same Month Last Yr	4.52	4.35	4.50	4.57	4.64	5.19	5.25	5.22	4.70	4.44	4.75	4.82	5.62	3.67	4.06	4.80
TN Nonag Employment (THOU) (2)	2156.9	2169.0	2167.6	2162.3	2159.4	2177.6	2193.2	2181.3	2190.2	2190.9	2179.9	2171.2	2168.4	2011.3	2091.8	2153.4
% Chg Prev Month SAAR	-1.92	6.99	-0.78	-2.93	-1.60	10.60	8.95	-6.29	4.98	0.38	-5.84	-4.69	-1.55	4.23	4.00	2.95
% Chg Same Month Last Yr	2.84	2.77	2.86	2.00	2.20	3.10	2.91	2.14	1.67	1.31	0.50	0.50	0.53	4.23	4.00	2.95
US Nonag Employment (MIL)	108.6	108.9	109.0	109.2	109.4	109.7	110.0	110.1	110.2	110.6	110.8	110.7	110.7	102.2	105.5	108.4
% Chg Prev Month SAAR	1.54	2.68	1.24	2.96	1.53	3.01	3.38	1.80	0.60	4.90	2.32	-0.96	-0.90	2.69	3.27	2.73
% Chg Same Month Last Yr	2.57	2.53	2.37	2.32	2.16	2.07	2.15	2.14	2.03	2.30	2.27	2.07	1.87	2.69	3.27	2.73
TN Unemployment Rate (%) (2)	4.9	4.6	5.0	5.2	5.2	5.3	5.1	5.0	4.9	5.1	4.7	4.9	5.1	6.6	5.8	5.1
US Unemployment Rate (%)	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.2	5.4	5.3	5.2	5.5	5.6	6.2	5.5	5.3
Bank Prime Interest Rate (%)	10.5	10.5	10.5	10.5	10.5	10.1	10.0	10.0	10.0	10.0	10.0	10.0	10.0	8.2	9.3	10.9
US Coincident Composite Index (1982=100)	133.9	133.5	133.0	133.6	134.0	132.9	134.1	134.5	134.0	134.7	135.2	134.9	134.2	122.4	128.2	132.9
% Chg Prev Month SAAR	12.42	-3.53	-4.40	5.55	3.65	-9.62	11.39	3.64	-4.37	6.45	4.55	-2.63	-6.05	3.15	4.72	3.63
% Chg Same Month Last Yr	3.80	3.49	1.99	2.93	2.21	0.83	1.59	1.89	0.90	1.66	1.81	1.73	0.22	3.15	4.72	3.63
US Leading Composite Index (1982=100)	144.8	145.0	144.6	144.6	145.3	145.3	143.9	145.2	145.1	145.8	146.0	146.0	144.2	140.1	142.8	144.9
% Chg Prev Month SAAR	5.99	1.67	-4.85	-1.67	5.97	0.00	-10.97	11.40	-0.82	5.95	1.66	0.00	-13.85	5.90	1.93	1.46
% Chg Same Month Last Yr	0.49	0.90	0.28	0.35	0.14	-0.48	-1.17	0.35	-0.48	1.11	1.39	1.32	-0.41	5.90	1.93	1.46
TN Coincident Composite Index (1/74=100)	125.9	126.3	126.3	126.3	126.6	127.1	125.0	126.2	126.7	126.3	126.8	127.1	125.4	118.6	122.9	125.8
% Chg Prev Month SAAR	8.16	4.02	0.04	0.04	2.53	4.87	-18.24	12.96	4.85	-4.16	5.06	2.55	-14.60	3.24	3.57	2.39
% Chg Same Month Last Yr	1.56	2.60	1.02	2.56	2.08	1.75	0.30	0.90	0.20	0.38	0.65	1.59	-0.39	3.24	3.57	2.39
TN Leading Composite Index (1/74=100)	113.7	113.6	112.7	113.3	112.4	113.9	113.8	112.9	113.0	113.1	113.7	112.5	111.8	112.7	113.4	113.4
% Chg Prev Month SAAR	12.04	-0.18	-9.92	6.88	-9.36	18.06	-1.05	-9.29	1.06	1.43	6.62	-11.92	-7.55	2.11	0.63	0.00
% Chg Same Month Last Yr	0.26	0.22	-0.74	0.47	-1.48	-0.81	-0.27	-0.69	-1.50	-0.36	0.35	-0.03	-1.62	2.11	0.63	0.00
TN Comm & Ind Elect Consumption (MIL KwH) (3)	2294	2338	2326	2399	2381	2486	2254	2307	2349	2370	2402	2469	2352	25124	26796	27784
% Chg Prev Month SAAR	7.06	25.55	-6.29	45.16	-8.65	67.50	-69.14	32.32	24.60	11.05	17.56	38.94	-44.06	3.26	6.66	3.69
% Chg Same Month Last Yr	1.14	3.90	2.27	6.17	4.89	10.41	-0.58	0.61	2.06	2.84	2.34	8.23	2.53	3.26	6.66	3.69
Help Wanted Index,Memphis (1987=100) (4)	142	141	148	155	138	140	131	139	144	131	131	129	125	145	144	143
% Chg Prev Month SAAR	8.98	28.97	57.05	66.82	-30.38	18.85	-54.95	103.67	52.82	-67.87	0.00	-16.86	-31.48	13.91	0.93	-0.87
% Chg Same Month Last Yr	6.67	2.14	4.52	0.75	2.22	-4.11	5.07	-2.11	-7.10	-10.88	-7.75	-7.19	-10.71	13.91	0.93	-0.87
TN Mfg Employment (THOU) (2)	525.0	525.7	525.2	524.0	523.0	526.8	528.3	523.9	524.7	525.2	521.0	521.0	517.0	497.4	511.8	523.7
% Chg Prev Month SAAR	0.46	1.10	-1.08	-2.82	-2.05	8.94	3.67	-9.53	1.73	1.11	-9.21	0.12	-8.78	1.40	2.90	2.32
% Chg Same Month Last Yr	2.47	2.07	2.00	1.83	1.48	1.99	1.46	0.60	0.41	-0.15	-1.21	-0.85	-1.55	1.40	2.90	2.32
US Mfg Employment (MIL)	19.4	19.4	19.3	19.3	19.3	19.2	19.2	19.2	19.2	19.2	19.1	19.1	19.1	19.0	19.4	19.4
% Chg Prev Month SAAR	0.00	1.54	-2.21	-1.72	1.36	-6.81	4.67	-1.67	1.67	-1.43	-1.58	-1.06	-2.97	0.32	1.73	0.39
% Chg Same Month Last Yr	0.41	0.34	-0.46	-0.56	-1.00	-1.87	-1.35	-1.47	-1.53	-1.60	-1.57	-1.58	-1.79	0.32	1.73	0.39
TN Mfg Avg Weekly Hours (3)	41.2	41.1	40.8	40.4	41.1	39.3	38.9	38.7	37.7	39.1	39.2	39.4	39.3	41.6	41.6	40.8
% Chg Prev Month SAAR	0.24	-2.32	-8.90	-9.35	23.39	-8.50	-12.10	-5.79	-28.67	55.17	4.22	5.22	-2.21	0.79	0.07	-1.83
% Chg Same Month Last Yr	-0.24	0.61	-0.74	-3.85	-6.37	-4.50	-5.80	-6.08	-8.64	-4.84	-5.33	-3.52	-4.15	0.79	0.07	-1.83
TN Taxable Sales (MIL $) (5)	3472	3459	3458	3498	3446	3636	3860	3633	3625	3550	3672	3846	3471	37583	39841	41407
% Chg Prev Month SAAR	2.41	4.32	-0.30	14.45	-19.15	94.67	92.55	-48.53	-2.62	-27.25	60.39	-8.31	-44.60	6.26	6.01	3.93
% Chg Same Month Last Yr	7.27	7.04	4.97	5.50	1.00	7.48	14.13	3.14	6.96	2.28	4.81	5.21	0.04	6.26	6.01	3.93
TN Taxable Sales (MIL 82 $) (5)	2789	2772	2758	2780	2725	2847	2993	2819	2808	2730	2825	2954	2639	33040	35665	33388
% Chg Prev Month SAAR	2.41	7.04	-5.88	10.14	-21.95	70.55	82.02	-51.55	-4.43	-28.59	50.32	-12.46	-49.65	2.49	1.89	-0.82
% Chg Same Month Last Yr	0.53	0.29	0.45	1.02	-3.68	2.18	8.44	-1.98	2.16	-2.07	0.05	0.37	-5.36	2.49	1.89	-0.82
Initial Claims For TN UI (THOU) (2)	43.9	38.4	42.3	41.3	42.1	43.4	46.2	42.7	44.9	46.5	34.8	45.9	48.4	439.2	417.2	466.1
% Chg Prev Month SAAR	63.0	-79.8	222.7	-26.9	24.4	44.8	-59.8	101.7	85.1	59.4	-96.9	2756.9	88.8	-14.2	-5.0	11.7
% Chg Same Month Last Yr	14.16	3.41	18.57	8.49	29.14	25.19	16.51	21.77	42.22	20.03	14.81	9.10	10.44	-14.20	-5.01	11.72
Continued Weeks Claimed For TN UI (THOU) (2)	196.9	172.8	202.0	203.2	185.3	216.6	197.5	187.9	219.1	234.2	202.9	237.6	217.0	2061.5	2065.2	2172.4
% Chg Prev Month SAAR	152.7	-76.4	350.8	7.3	-66.8	550.1	-67.0	-44.9	531.4	122.6	-82.1	565.7	-66.4	-10.5	0.7	5.3
% Chg Same Month Last Yr	1.73	3.51	18.66	4.35	14.93	24.83	18.35	9.34	33.73	28.28	16.74	30.82	11.35	-10.51	0.08	5.29
Total TN Construction Starts (6)	466.6	467.6	457.7	431.7	393.6	457.7	422.7	398.1	490.6	488.0	425.0	564.1	380.8	5330.5	5285.8	5341.7
% Chg Prev Month SAAR	548.4	2.4	-54.7	-19.2	-67.0	511.1	-61.5	-51.3	1124.0	-6.1	-80.9	84.4	-71.2	1.2	-0.9	1.1
% Chg Same Month Last Yr	4.28	5.86	2.09	12.01	-13.56	4.54	-10.35	2.03	11.40	10.62	-5.87	8.92	-18.40	1.22	-0.88	1.10
Value Of TN Constrc Starts (MIL 82 $,ASA) (6)	436	491	291	275	334	255	228	280	268	303	382	231	353	4495	4240	4054
% Chg Prev Month SAAR	10758.8	312.2	-99.8	-50.1	240.8	-88.2	-73.1	1056.4	-40.8	340.8	1480.9	-99.8	15849.5	7.9	-5.7	-4.4
% Chg Same Month Last Yr	-5.19	51.34	26.08	6.16	-2.56	-8.21	0.98	6.59	-28.44	-23.06	-5.26	-21.59	-19.03	7.86	-5.67	-4.40

	87/II	87/III	87/IV	88/I	88/II	88/III	88/IV	89/I	89/II	89/III	89/IV	90:I	90/II	1987	1988	1989
US GNP (BIL 82 $) (1)	3820.3	3858.9	3920.7	3970.2	4005.8	4032.1	4059.3	4095.7	4112.2	4129.7	4133.2	4150.6	4155.1	3845.3	4016.9	4117.7
% Chg Prev Qtr SAAR	4.20	4.10	6.56	5.15	3.64	2.65	2.73	3.64	1.62	1.71	0.34	1.69	0.43	3.43	4.46	2.51
% Chg Same Qtr Last Yr	3.12	3.95	5.01	5.00	4.86	4.49	3.54	3.16	2.66	2.42	1.82	1.34	1.04	3.43	4.46	2.51
TN Personal Income (MIL $) (1)	62062	63159	65418	65947	67389	68450	69820	71051	72435	73575	74650	75984	NA	62939	67877	72878
% Chg Prev Qtr SAAR	4.33	7.26	15.09	3.65	9.70	6.45	8.25	7.24	8.02	5.29	7.15	7.34	NA	8.80	7.84	7.37
% Chg Same Qtr Last Yr	8.31	8.27	10.40	7.74	8.58	8.38	6.73	7.90	7.49	7.20	6.92	6.94	NA	8.80	7.84	7.37
TN Personal Income (MIL 82 $) (1)	52153	52501	53842	53885	54666	54804	55281	55552	55934	56356	56639	56704	NA	52617	54634	56120
% Chg Prev Qtr SAAR	1.41	2.70	10.61	0.32	5.15	1.75	3.53	1.97	2.78	3.05	2.03	0.46	NA	4.01	3.83	2.72
% Chg Same Qtr Last Yr	3.31	3.23	5.22	3.68	4.63	4.39	2.67	3.09	2.51	2.83	2.46	2.07	NA	4.01	3.83	2.72

1. Annual Rate.
2. Calculated from data provided by the Tennessee Department of Employment Security.
3. Source: Tennessee Valley Authority.
4. Source: The Conference Board.
5. Calculated from sales tax collections, provided by the Tennessee Department of Revenue.
6. Source: F.W. Dodge Division of McGraw-Hill Information Services Company.

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Winter 1991

SURVEY OF BUSINESS

ECONOMIC OUTLOOK 1991

Survey OF BUSINESS

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Winter 1991/Volume 26, Number 3

Erratum: The summer issue was incorrectly labeled as Vol. 25, No. 2. The correct volume should have read Summer 1990/Volume 26, No. 1.

As the 22nd annual Outlook issue of the *Survey* goes to press, the U.S. faces a less-than-encouraging economic horizon. War in the Middle East and uncertainties concerning oil prices, as well as the softening of the economy and inflation, anemic consumer spending, the S&L debacle and resulting monetary policies have all contributed to the recession now underway.

Although the 187 Tennessee business executives who answered our annual questionnaire are concerned about the war in the Middle East, they are also looking beyond that crisis for solutions to the economic problems in our own state. For the third year in a row, better education and job training are top priorities, as reported in the first article, the "Annual Business Attitudes Survey," analyzed by Betty B. Vickers and Kenneth R. Quindry. As with our previous twenty-one issues, this Outlook edition is a reflection of the attitudes of business professionals across Tennessee who contribute, through their broad experience and intuition, a feeling for the economic vitality of our state. Through their valuable contributions to this issue of the *Survey*, we can help gauge the current economic climate as well as anticipate future economic trends.

John W. Mayo is author of the second article, "The U.S. Economic Outlook." While national uncertainty reigns and economic developments are dependent on the outcome of the war, Dr. Mayo provides an overview of national conditions and offers a short-term outlook for the United States. The analysis includes a short war scenario, an extended war scenario, and their implications for Tennessee.

Instability at the national and international levels also weighs heavily on the outlook for the Tennessee economy. However, in the third article, "The Economic Outlook for Tennessee," by David M. Mandy, Matthew N. Murray, and Russell Dabbs, it is suggested that the downturn for the state will be relatively brief and mild and that Tennessee economic growth will be modest but stable. The accompanying agriculture outlook is provided by Burton English and Kitty Hawk Loewen of the UT Department of Agricultural Economics.

The fourth article, "Urban and Rural Economies in Tennessee," by Carlos Martins-Filho and Ayoub Yousefi, addresses demographic, economic and social indicators that define Tennessee's rural and urban areas.

David A. Hake
Consulting Editor

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Dr. Hake is Director and Research Professor, CBER, and Editor, *Survey of Business*

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Dr. Mayo is Research Associate Professor, CBER, and Associate Professor of Economics, UT.

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Dr. Mandy is Research Assistant Professor, CBER, and Assistant Professor of Economics, UT. Dr. Murray is Research Assistant Professor, CBER, and Assistant Professor of Economics, UT. Russell Dabbs is a Graduate Research Assistant at the Center for Business and Economic Research.

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Martins-Filho is a graduate student in the UT Department of Economics, and Ayoub is a Graduate Research Assistant at the Center for Business and Economic Research.

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* Charles M. Wilson, President, C. M. Wilson & Associates, Inc., Memphis

J. S. Wilson, President, Conwood Company LP, Memphis

Thomas E. Wilson, Chairman of the Board and CEO, Sovran Bank/Tri-Cities, Johnson City

Tim Windham, Plant Manager, Clorox Company, Dyersburg

Carter H. Witt, President, Tennessee Association of Business, Nashville

Albert Wofford, Tennessee Group Controller, Seigel Robert, Inc., Ripley

Charles E. Wolfenbarger, President, International Union of Electronic Workers, Jefferson City

♦ W. Lewis Wood, Jr., Senior Vice President, Allen & Hoshall, Inc., Memphis

J. R. Wright, President, Teledyne Lewisburg, Lewisburg

Frank Wylie, President, Genco and Wylie Fabricators, Inc., Brentwood

* Thomas L. Yount, Investor and Consultant, Nashville

† Allen Zang, President, Nashville Bridge Company, Nashville

★ Served 22 years.
♦ Served 15 or more years.
† Served 10 or more years.
* Served 5 or more years.

DEMOGRAPHIC PROFILE OF THE 1991 ECONOMIC OUTLOOK PANEL

The 1991 Economic Outlook Panel consists of 187 business, government and academic leaders from across Tennessee. Through participation in the "Business Attitude Survey," conducted in October of each year, these leaders share their expectations for the U.S. and Tennessee economies from both their business and regional perspectives. Responses received before the survey closing date, a total of 173, are included in the data tabulation and analysis. Another 14 responses were received after the closing date. However, these, along with earlier responses, provided valuable direction and comments for this article.

CHART A

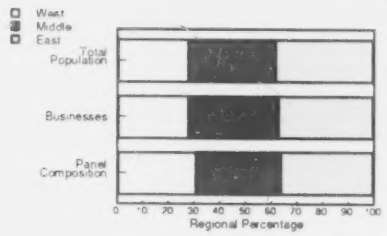
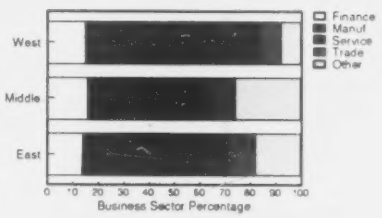


CHART B



The tabulation of data by geographic location includes 53 responses from business leaders in West Tennessee, 57 from Middle Tennessee, and 63 from East Tennessee. Chart A shows this geographic distribution of the 22nd Outlook Panel as well as the geographic distribution of the population and the number of business establishments in Tennessee. The data sources for the latter are *Current Population Reports* and *County Business Patterns*, both published by the U.S. Department of Commerce, Bureau of the Census. In its cross-section makeup, the 1991 Outlook Panel roughly approximates population and business concentration for each region of Tennessee.

Panelists are further identified according to one of five industry group designations. Tabulated responses to the 1991 Outlook survey include 62 manufacturers, 38 service sector panelists (including chambers of commerce, United Way agencies, consulting firms, accountants, architects, and attorneys), 26 finance panelists (including banks, insurance, brokerage firms and other financial consultants), 17 wholesale and retail trade panelists, and a fifth category designated "other," which includes 30 business leaders from construction, labor, public utilities, education and government. Chart B depicts the industry group composition of panelists from each geographic region.

THE 22nd ANNUAL BUSINESS ATTITUDES SURVEY

by Kenneth E. Quindry
and Betty B. Vickers

PART I: THE LABOR FORCE: TRAINING AND RETRAINING

PART II: ECONOMIC OUTLOOK SUMMARY FOR 1991

PART III: CRITICAL ECONOMIC ISSUES FOR 1991

PART IV: SOCIAL ISSUES OF THE NINETIES

PART V: TENNESSEE HEALTH SERVICES ISSUES

The U.S. is embroiled in a war in the Middle East and struggling with a recession at home. But even before these crises developed, the Tennessee economy was experiencing an economic slowdown for which solutions need to be found.

According to the consensus of 187 business leaders who responded to the 22nd CBER Business Attitudes *Survey* Outlook questionnaire, a primary reason for lack of growth on the state level can be found in the schools. An inadequate state educational system has failed to provide students with the necessary background for absorption into a highly technical work force or to give them the basic skills to adapt to changing technology in an era when facility in math, science, problem solving, and communication is the foundation for worker training and retraining. As a result, say the panelists, the supply of skilled workers in the state is not likely to improve. This problem area will be a primary cause of reduced economic growth and higher unemployment not only in 1991, but possibly for the next decade. Unfortunately, one of the chronic deterrents to progress in this area has been the concern that education reform can come only at the expense of higher taxes.

This article is divided into three parts. Part I A is limited to five questions on the relationship between technological development, worker preparation and unemployment. The 187 panelists vote for continued attempts at technological advances, believing that adequate worker training and retraining will maintain employment at acceptable levels. In order for this to happen, strong emphasis must be placed on basic and con-

tinuing education and training of the work force. This emphasis is especially apparent in Part I B, where the panel votes overwhelmingly for improvements in basic education and continuing education of workers through the cooperative efforts of the education system, labor, and industry.

In Part II, the panelists foresee rather dismal economic prospects for Tennessee in 1991. Most major economic measures are viewed negatively. Prices, unemployment, and interest rates are up, and industrial output, supply of capital, and profits are down. All these factors have, of course, become elements contributing to the current recession.

Part III asks the panelists to select among the most critical of several potential economic problems for 1991. Building on the responses in Parts I and II, panelists identify some major problems as the inadequacy of basic education and the lack of the supply of skilled workers. Profits are expected to be down somewhat as consumer demand falters and energy costs rise. Increasing labor costs (especially costs of employee health care benefits) are of special concern. Despite the gloomy outlook for Tennessee, the panelists, by a small margin, believe that the Tennessee economy will outperform the national economy (or the recession will be less severe in Tennessee). There is an overwhelming belief that in the long run, Tennessee's economic future is bright, but only if workers are educated and trained to meet the demands of rapid technology growth.

PART I
The Labor Force–Training and Retraining

Since the beginning of the Industrial Revolution, workers have often opposed new production techniques because they feared it would cause extensive unemployment.[1] But although technological change often displaces workers, history has shown that such progress leads to new business opportunities, higher employment levels, increased wages, and a higher standard of living.

In recent years rapid technological progress and transfer has outmoded many production processes and occupational classifications. Workers must then be reemployed at jobs requiring different levels of skills and education. Reeducation and retraining is often difficult, lengthy, and uncertain. As the rate of progress accelerates, the number of displaced workers tends to grow, increasing the need for retraining. In most cases, a worker changes his job status at least six or seven times during his working life. It is now an accepted view that because of the recent rapid displacement of workers, the normal "full employment" level will find approximately 5-6 percent of the labor force temporarily unemployed because it is difficult for re-education and retraining to keep pace with technological development.

As noted in Figure 1, 28.9 percent of our panelists disagree with this assessment, apparently believing that improved education and training will tend to reduce the unemployment level below the 5-6 percent figure, even with rapid technological growth. Some pertinent comments follow:

> It is my feeling that as technology level industries increase, the short-term impact will be higher unemployment, but this effect will be short- lived.

> While the technology that is replacing workers probably has some impact on unemployment in Tennessee, the effect is minuscule compared to the effects of the weak education system, poverty, and racial discrimination.

The panelists vote heavily (97.7 percent) for continued efforts to promote technological growth, even though the unemployment rate might remain at the 5-6 percent level. These panelists apparently believe that too little attention to preparing workers to meet the needs of changing technologies was the cause of much unemployment. As two panelists analyze it.:

> Technological development may cause unemployment, but a potentially greater unemployment exists if we do not have technological change.

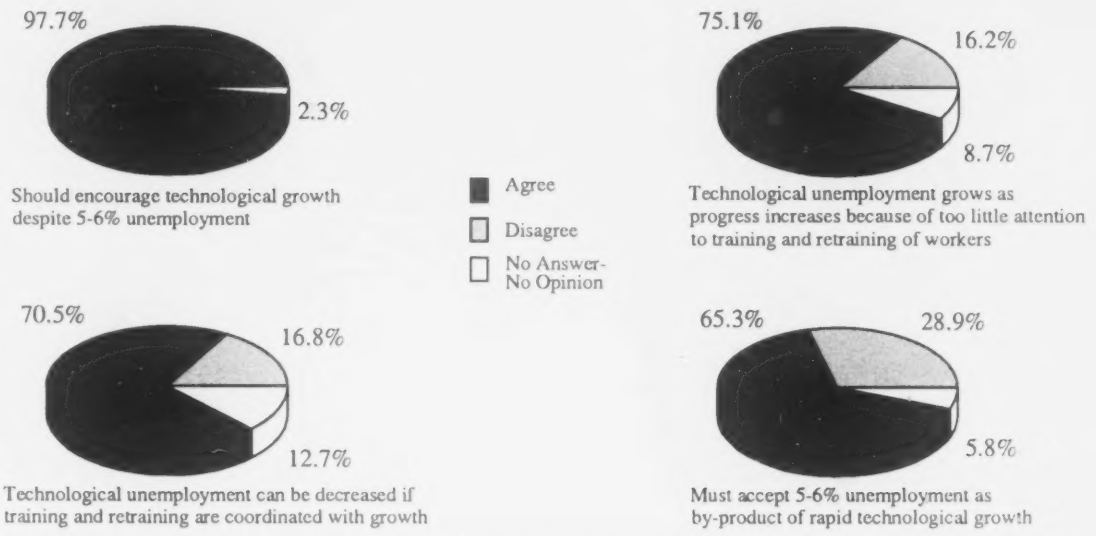
> Proper retraining of those unemployed as a result of technological development should minimize effects of (the unemployment).

In both their votes, as registered in Figure 1, and in their comments, the panelists strongly affirmed that Tennessee education and training efforts must be improved if Tennessee is to assume its rightful place in the nation's economic development. While 65.3 percent agree that we must accept a 5-6 percent unemployment level as a by-product of rapid technological growth, they believe unanimously that growth should be promoted. A lower level of unemployment is unattainable because (as of now, at least) too little attention is being paid to education and training and to coordinating education and training of workers with developing jobs. Two comments by the panelists bear this out:

> Basic education is the most effective long-term strategy because without our educated work force, other retraining, such as technical, continuing education, etc., will not be very effective.

1. This type of unemployment is often lableled as technological unemployment. It occurs when workers are displaced by the introduction of new production processes or the closing of outmoded plants. The workers are then unable to reenter the labor force without additional education and training.

FIGURE 1
Panelists' Views on the Technological Growth-Unemployment Relations



If we don't bring our employee pool along at a rate that keeps up with technological development, we will get further behind. We won't be able to attract the technology jobs to our state.

In Section B of Part 1, the panelists were asked to select three from nine often-mentioned strategies that would be likely to attack the problem of inadequately prepared workers. Their votes are registered in Figure 2. By a wide margin, the panelists believed that basic skills are the cornerstone of worker preparation.

Without basic education there can be no progress.

For workers to be adaptable and flexible, they must first possess basic education, skills, and knowledge.

A pool of workers prepared to accept technical training would enhance industry's ability to apply developing technology.

Basic literacy and practice in thinking, problem solving, communication *must* precede specific training and job education.

Unless one can read, write, and handle basic mathematics, there is no avenue for learning technology--or anything else.

But basic education is only the beginning of a lifetime learning process. Not only must entry-level workers be capable of grasping necessary skills, displaced workers must be retrained. Emphasizing basic education skills was selected over the second and third choices by a two-to-one margin.[2] Strong support, however, is also given to education-labor-industry cooperation in education and training and in continuing education opportunities for workers. Moderate support is provided for apprenticeships and on-the-job training and a statewide policy to attack technological unemployment. Three panelists commented as follows:

The resolution of technological unemployment requires both basic skills emphasis in education (so that workers are readily retrainable and self-trainable) and cooperative state- and local-industry programs. This will come consistently only if a high degree of awareness and commitment exists through a fully endorsed statewide policy.

Apprentice programs are now nonexistent for the most part in this country. Other industrial countries are maintaining such programs and have seriously eroded our industrial base and know-how.

2. Besides providing the percentages of first, second, and third-place votes, Figure 2 lists a weighted average, giving a weight of three for a first choice, two for a second choice, and one for a third choice. Emphasizing basic skills is far in front, according to the weighted average ranking, because 56.6 percent of the panelists selected it as the number-one strategy. Because a greater percentage of the panelists selected education-labor-industry cooperation in first place more often than continuing education opportunities, the former ranked higher than the latter even though chosen less often as first, second, and third choices.

A reflective strategy/program should include ongoing communication with industry and labor to ensure that the educational offerings are current or ahead of the need rather than behind.

The panelists offer little support for the notion of the use of businesspeople as volunteer part-time teachers, to entrepreneurship training in schools, or to the business adopt-a-school program–ideas that have attracted some attention among planners.

PART II
ECONOMIC OUTLOOK SUMMARY FOR 1991

Tennessee business executives overwhelmingly agree that 1991 will be a difficult year for both the state and the nation. In response to the survey, representatives from all sectors of the state economy share the opinion that both Tennessee and the U.S. will experience a decline in 1991. Figure 3 shows that 68 percent of the Outlook Panel expects the state to be down relative to 1990. This is the largest percentage in the twenty-two-year history of the *Survey* to record negative expectations for the state economic environment. In 1975, 53 percent looked for a downturn, and in 1982, 38 percent expressed similar concerns.

Outlook panelists are even more pessimistic about the U.S. economy. Eighty-two percent feel that the national economy will be down relative to 1990:

A West Tennessee Finance Executive: I am very pessimistic about the economy, both statewide and nationally, for the next two to three years. The banking environment will continue to stunt the growth of those businesses most likely to provide new jobs in the next decade.

A Middle Tennessee Manufacturer: Increased emphasis on autos and aftermarkets in recent years will make us more sensitive to recession.

Many panelists feel that the Tennessee downturn will be driven by changes at the national level:

A Middle Tennessee Business Leader: [The state economy will be] flat and reflective of the national scene. Consumer demand will be soft.

A Middle Tennessee Manufacturer: Tennessee's general outlook is bleak for 1991 because of the national economy.

However, many Tennessee business executives believe that our state economy is healthier than both the nation and most other states.

A West Tennessee Finance Executive: Tennessee will fare better in 1991 than the U.S. as a whole because Tennessee's economy is well balanced between manufacturing, service, agriculture, and finance.

FIGURE 2
Panelists' Choices Among Strategies to Promote Worker Adequacy

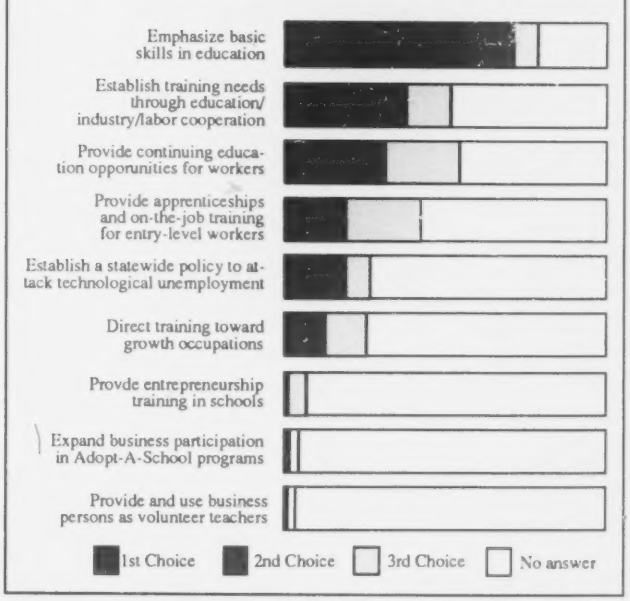

Emphasize basic skills in education
Establish training needs through education/ industry/labor cooperation
Provide continuing education opportunities for workers
Provide apprenticeships and on-the-job training for entry-level workers
Establish a statewide policy to attack technological unemployment
Direct training toward growth occupations
Provde entrepreneurship training in schools
Expand business participation in Adopt-A-School programs
Provide and use business persons as volunteer teachers
1st Choice
2nd Choice
3rd Choice
No answer

FIGURE 3
1991 Expectations for Tennessee and U.S. Economy as Compared with 1990

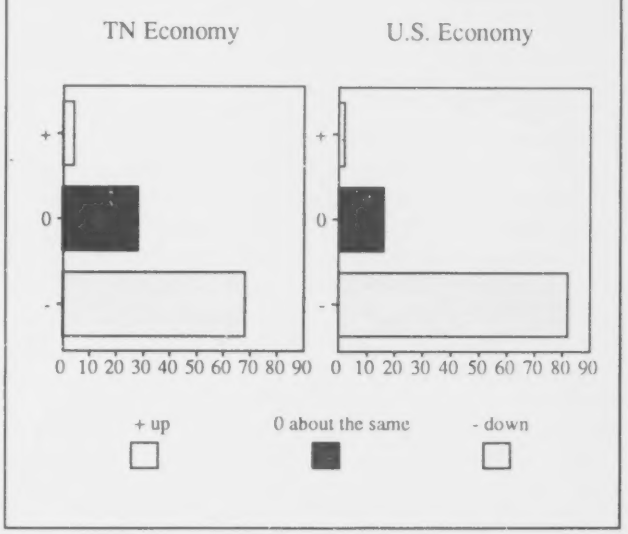
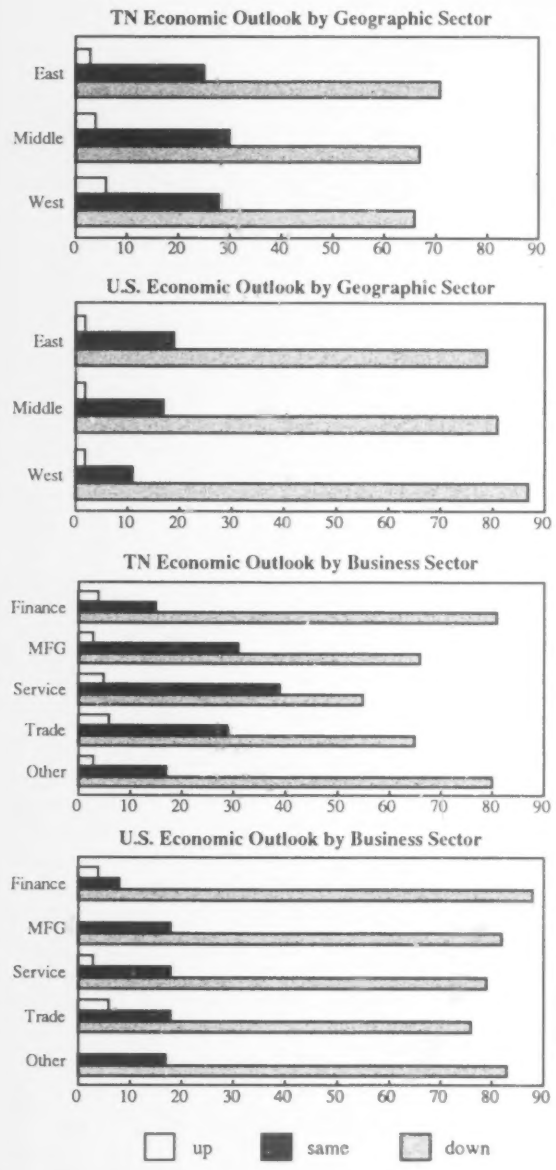


FIGURE 4
Outlook Panel Views by Geographic and Business Sectors
(By Percent of Panelists Expressing an Opinion)



A Business Leader from West Tennessee: I think we're about average economically–better than some southern states and worse than many western and northern states. Somehow I feel a recession might not hurt Tennessee as badly as it would some other states. I applaud our last two administrations for getting us moving competitively and economically.

(Other observations are included in the "State of the State" section following this article.)

Panelists from East Tennessee take a slightly more definitive stance than those from Middle and West Tennessee in their outlook for a decline in the state economy. Figure 4 shows that 71 percent of the East Tennessee panelists expect the state economy to be down in 1991 relative to 1990, while just over 66 percent of Middle and West Tennessee executives share that outlook. Panel opinion for the U.S. outlook is led by responses from West Tennessee. Eighty-seven percent of these panelists expect a decline in the national economy, compared to 79 and 81 percent from East and Middle Tennessee, respectively.

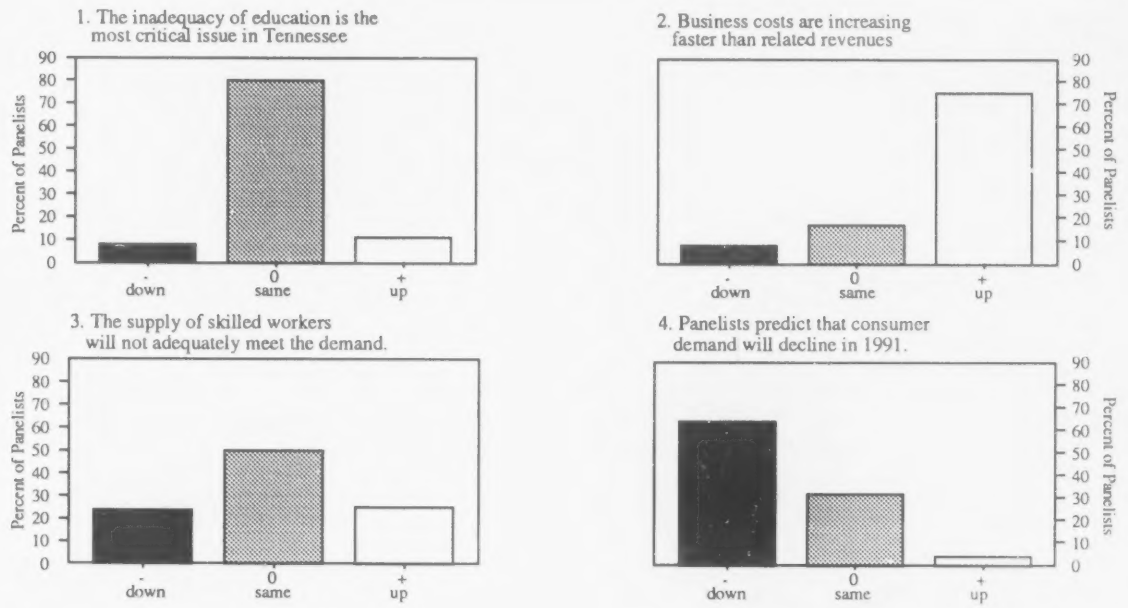
Panel response, detailed by business sector, shows that there is more concern in the finance and "other" categories, where more than 80 percent of the panelists think that the state economy will decline in 1991. These two business sectors also lead panel opinion regarding the outlook for the national economy. Eighty-eight percent of the finance sector panelists and 83 percent of the "other" category expect a decline in the U.S. economy in 1991. The trade, service and manufacturing sectors follow closely, as 76 to 82 percent look for a downturn.

PART III
CRITICAL ECONOMIC ISSUES FOR 1991

When Tennessee business executives answered their Outlook questionnaires, they accurately predicted that the economy in 1991 (compared to 1990) was headed for a downturn. Their evaluation of 20 potential economic problem areas shows that expectations for the supply of capital range from 65 percent who anticipate a decrease in short-term capital to 82 percent who anticipate a decrease in long-term capital. Sixty-seven percent anticipate declines in plant utilization rates; 64 percent, consumer demand; 79 percent, industrial construction; and 81 percent, residential construction. Increases are anticipated in unemployment rates, business costs, consumer prices and energy costs. It is not surprising that many of these business executives also predicted the current recession.

In addition to evaluating 20 potential economic problems, survey respondents were asked to select the five most critical

FIGURE 5
Critical Economic Concerns in Tennessee:
Ranking and Expected Performance in 1991 Compared to 1990



issues Tennessee will face in 1991. These issues were weighted from the most critical concern, which received five points, to the fifth-ranked issue, which received one point. The scores were then summed to provide the total panel score (indicated by an asterisk). The four most critical issues are shown in Figure 5.

It is noteworthy that two areas not expected to change in 1991–perceived inadequacies in basic education and scarcity of skilled workers–are judged as the first and third most critical problems (see Table 1). Concurrently, many other economic areas expected to weaken are evaluated as less critical. Perhaps the business leaders who make up the 1991 Outlook Panel feel that little can be done to affect the present economic situation. Indeed, many suggest that Tennessee reflects the national economic conditions. Moreover, many panelists share the conviction that Tennessee's future strength depends on the education and skill level of its work force. Panelists' comments on each of the critical issues bear this out.

1. Inadequacy of basic education (Score = 392)*

Although little change can be affected in one year, panelists feel strongly that every effort must be made to improve our educational system. Twenty-seven percent of the Outlook Panel selected this issue as the most critical one for 1991.

A Manufacturer from Middle Tennessee: Under-educated citizens generally have a low self-esteem and as a result do not care whether they improve their economic well-being or not. If they do care, they are too insecure to do anything about it.

A Service Sector Executive from East Tennessee: An inadequate education closes down your options for life. You have no inkling about what may be aspired to, no insight about making substantial changes in your situation, and no perception of the economic rules that affect your value as a worker.

TABLE 1
Potential Economic Problems
Ranked by Importance to Tennessee in 1991

Rank	Issue	Percent Panel Selecting	Score
1	Inadequacy of basic education	62	392
2	Total costs increasing faster than revenues received	49	306
3	Scarcity of skilled workers	38	231
4	Inadequate consumer demand	38	202
5	Supply of capital investment funds	35	198
6	Cost of energy (electricity, gas, etc.)	32	163
7	Supply of short-term working capital unemployment	22	127
8	Unemployment	23	112
9	Level of new residential construction	20	84
10	Utilization of plant capacity	14	74
11	State and local taxes as percentage of personal income	15	73
12	Interest rates on loans	14	64
13	Supply of venture capital	13	60
14	Level of commerical-industrial construction	14	57
15	Adoption of technological innovations	11	54
16	Demands for wage rate increases	14	52
17	Consumer price level	10	45
18	Ability to attract and keep competent managerial personnel	8	42
19	Labor-management cooperation	9	28

*Each panelist selected five issues.

An East Tennessee Manufacturer: Productivity/quality improvements can be obtained only through the efforts of a competent, well-trained and motivated work force. Tennessee's poorly prepared high school grads (along with the high dropout rate) make it difficult to build such a team. There's no short-term solution, but a scheme such as the McWherter plan (or equivalent) must be developed and implemented.

A Service Sector Panelist from West Tennessee: People without basic education cannot compete in the labor market--hence poverty and drug selling. In Shelby County our poorer people-- primarily blacks--do not (from a parenting standpoint) help educate their children in the elementary years. Hence, they never catch up in junior or senior high. We need to provide a substitute for this failure.

A Service Sector Panelist from West Tennessee: An educated work force is the key to economic development. The education must start at the basic level for upgrading or retraining to become possible.

A West Tennessee Manufacturer: Business will support a basic education improvements program, I believe, if the program is comprehensive, provides a basis of accountability and is well accepted by the general public.

A West Tennessee Manufacturer: The lack of basic education is costly not only because of high unemployment that accompanies it, but also because of lost opportunities to bring desirable technologically advanced industry and services to Tennessee. Tennessee must focus on improving the quality of basic education in our public schools. Support for the Governor's program is a first step. A more demanding curriculum in keeping with advancements in technology must be emphasized. We should provide more personal computers to allow hands-on learning opportunities for each student. Education is an expense we cannot afford *not* to pay.

A Service Sector Panelist from East Tennessee: Basic education–good education–is critical to the overall state of the economy. Tennessee must continue its emphasis on better schools performance.

2. Total costs increasing faster than revenues received (Score = 306)*

An anticipated profit squeeze is judged critical by Tennessee business leaders. In fact, nearly half of the panelists list this issue among the top five for 1991. An even higher percentage of the 1991 outlook panel–75 percent–expects an increase in total costs relative to revenue as compared with 1990.

A Trade Executive from Middle Tennessee: I feel that revenues will be down due to a decrease in consumer demand. At present, the public is unsure of the security of their jobs. Therefore, major purchase decisions will be delayed. The increasing cost of energy is affecting consumers as well as business. With consumer demand down, it will be very difficult for business to pass along their increased expenses.

In selecting business costs as the most critical issue, two other trade executives also link this concern to declining consumer demand (the fourth-ranked issue) and point out the problem of upward wage pressures. Other rising labor costs identified as important by Outlook Panelists include insurance and fringe benefits.

Consumer demand appears to be slackening while inflation and upward wage pressures are squeezing operating profits.

In order to remain competitive, business will have to hold 'retails' (or costs to their customers) down while uncontrollable expenses such as insurance and utilities continue to rise.

A Manufacturing Executive from West Tennessee adds:

Insurance and other fringe benefit costs are accelerating faster than they can be offset by increased productivity.

The conflict in the Middle East also increases the pressure on business profits.

A West Tennessee Manufacturer: The sharp increase of oil prices will affect all segments of the economy. This in the face of recession forces will make it difficult for most industries to show a profit. [We have to] resolve the crisis in the Middle East.

3. Scarcity of skilled workers (Score = 231)*

As in prior years, scarcity of skilled workers is closely tied to basic education needs. A majority of the Outlook Panel thinks that the supply of skilled workers will remain about the same as last year. Dissenters are evenly divided between those who anticipate an increase in the supply of skilled workers and those who expect a decline.

A West Tennessee Manufacturer: Scarcity of skilled workers creates an additional cost burden on the manufacturing sector that the ultimate consumer will bear. Systematic solutions hinge on stronger basic education gains in the primary and secondary schools. Without systematic broad-based change in the quality of education, Tennessee will not be ready for 2000.

A West Tennessee Manufacturer: Finding people to work is decreasing each year--lack of motivation to work seems to be spreading. Government should not make it so attractive not to work; that is the big problem.

A Trade Executive from East Tennessee: We must prepare our workers earlier in school to make them trainable. We cannot train an ill-prepared worker.

A Middle Tennessee Manufacturer: This is a long-developing deficiency related to our poor public education system. The industry demands of today include a trained--not necessarily educated--but skill-related trained work force.

4. Inadequate consumer demand (Score = 202)*

Nearly two-thirds of the Outlook Panel expect a decrease in consumer demand in 1991 relative to 1990. Thirty-eight percent believe that this anticipated decline is serious enough to rank it among the five most critical issues for Tennessee in 1991. Inadequate consumer demand is also identified as a primary cause of the anticipated profit squeeze, the second most critical issue for 1991.

An East Tennessee Manufacturer: Inadequate consumer demand is a result of a nationwide fear of the current political and economic uncertainties. Once we manage to reduce the trade deficit and go back to the basics of prudent business practices, things will get much better.

A Middle Tennessee Finance: Consumer demand is the most important component of gross state product. It leads to growth in investment spending and new job creation. Unfortunately, I do not see consumer demand rebounding until either consumers regain confidence in the economy or savings increase for a sustained period of time.

A Service Sector Panelist from Middle Tennessee: It [inadequate consumer demand] impacts us two basic ways: 1) our consumer goods producers lower rates of production and lay off employees and 2) lower local consumption reduces the sales tax revenues immediately.

5. Supply of capital investment funds (Score = 198)*

A decrease in savings incentives and the imposition of more stringent banking rules are not expected to provide an environment conducive to the development needs of a declining economy. Thirty-five percent of the Outlook Panelists ranked this concern among the most critical problems in Tennessee in 1991. This issue ranked 9th in 1990, with 20 percent of that panel expressing concern.

A Service Sector Panelist from East Tennessee: Recession and fear of more recession on top of a regulatory squeeze on bank lending will constrict capital availability. Unfortunately, most of the problem arises from policies already adopted in Washington and can't be dealt with here at all.

A Service Sector Panelist from Middle Tennessee: The 1986 tax law changes, capital gains issues, and loss of tax-exempt industrial revenue bonds combine to limit capital investment available.

A Finance Executive from West Tennessee: The overreaction of banking regulators to the savings and loan situation in 1990 will prevent traditional lenders from participating in the supply of capital to growing companies in 1991 (as it has in 1990). This will continue to reduce job growth substantially, and growing company management will continue to spend a disproportionate amount of their daily efforts raising financing rather than seeking new growth opportunities.

The other fifteen potential economic problems received scores ranging from 29 to 163 as detailed in Table 1. Also included in this table is the percentage of the panel that designated each issue as one for concern. It is noteworthy that each issue is considered critical by at least 8 percent, or 14 members, of the Outlook Panel. ■

THE 1991 PANELISTS COMMENT

EAST

Service Executive: Recession seems likely early in 1991, but I believe the economy will rebound by mid-year.

Business Leader: World-wide conditions will have negative effects on Tennessee as well as the entire country. Public education continues to be weak. The work force has a strong work ethic and continues to be our strength.

Business Leader: Tennessee is not going to be hurt in 1991 like some areas. New industry still likes us, and, with some exceptions, we're not overbuilt.

Trade Executive: If Saturn and 84 Japanese companies can prosper in Tennessee, and Nissan and Kamatsu can double their capacities, we must have the answers. We need to spread the word to the others who employ in Tennessee.

Business Leader: Tennessee's outlook is better than the nation's because of the diversification in this economy. The emphasis on education "standards" deserves the attention it is receiving. We must move into the upper levels in comparison to other states.

Trade Executive: If our educational system is addressed and funded, Tennessee will lead the southern states in economic growth.

Manufacturer: Tennessee's strength continues to be its location and geography. Our weakness is the lack of a plan and enlightened leadership to go forward. We need to develop a concentrated strategy to increase the strength of our economy.

Manufacturer: Tennessee has been fortunate in its efforts to attract industrial investments. This can only continue if we step up to our educational deficiencies. It's "pay me now or pay me later."

Business Leader: Tennessee's overall outlook for 1991 is poor. We must recruit new industries for counties which have few or no industries. We are weak on training and cooperation between business and labor. Our great strength is the "people".

Service Executive: Slow housing starts will add to the overall downturn economically for Tennessee. The only way to rejuvenate the housing market will be lower interest rates and the Feds are unwilling as of now to lower them because of inflation, which is being driven by artificially high fuel costs.

Manufacturer: Tennessee stands at the crossroads of the Eastern U.S. population –it's hard to go wrong. We need aggressive, intelligent leadership as never before to generate the consensus to allow necessary changes for the turn of the century. It's more than classrooms and more than factory floors; we all need to re-educate, upgrade, challenge and change.

Finance Executive: Tennessee is full of good people. Our tax basis is our major weakness. The sales tax/property tax scene must change for us to be able to grow. Regressive tax structures impact the low income person disproportionately.

Trade Executive: I feel that Tennessee's overall outlook for 1991 will [be] poorer than the country as a whole mainly due to the types of industry the state relies on for employment opportunities.

Service Executive: The economy appears to be slowing in Tennessee. Communities that have positioned themselves with good education systems and a sense of civic pride and cooperation will prosper. Inner cities and rural areas will continue to suffer difficult odds against their ability to attract investments and jobs.

Manufacturer: Tennessee's general economy is varied and misses many of the hard ups and downs.

Service Executive: East Tennessee may be a little better off than other parts of the state. We may not be as mixed in the real estate and credit crunch as Nashville nor have as intractable a rural and minority education/employment problem as West Tennessee. The record enrollments at Pellissippi and Roane State are not being matched elsewhere in Tennessee and *some* of this is reaching beyond Knoxville's Metropolitan counties.

MID

Manufacturer: Depending on the outcome of the Gulf Crisis, Tennessee is in a good position to see economic growth. One major setback could be the addition of a state income tax. I feel this is a weakness because businesses and individuals enjoy the absence of a state income tax, and it presents a drawing ace to out-of-state workers.

Finance Executive: The overall outlook for Tennessee looks favorable due to the industries moving into Tennessee that are associated with the automotive industry. Nissan and Saturn have brought in a lot of satellite industries.

Manufacturer: I believe Tennessee's economy will be down in 1991 due to lower consumer demand. Our challenge will be to keep costs in line with sales.

Manufacturer: The Tennessee economy is increasingly more dependent on the automobile and construction industries. Like the rest of the country, we will be in a slump during 1991. Several banks and savings and loan institutions are in trouble. There will be plenty of money available but [it] will be tough to borrow.

Business Leader: Continued reliance on industrial growth related to one industry–i.e., automobile–is disturbing. Diversification should be actively pursued. Movement toward personal income tax should be viewed with extreme caution.

Service Executive: The basic economy of Tennessee will remain static, with the influx of new businesses picking up the labor surplus from industries downsizing. However, the individual Tennessean will see a downturn in his/her purchasing power and overall stability.

Business Leader: The tax base must be restructured. The state must raise revenue and attend to education and the infrastructure so that a solid economic base for future growth can be shown and capitalized upon.

Service Executive: My overall outlook for Tennessee in 1991 is cautiously hopeful. A major strength in our state is the diversity of our economy. Many factors combine to weaken our economy and should be addressed immediately, includ-

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ing cost of doing business, high sales tax, inadequate education system, tight lending environment and a flooded real estate market.

Finance Executive: Strengths–diversity of industry across the state, Saturn's influence growing in Middle Tennessee, banks with money to lend. Weakness–overbuilt real estate market. Tennessee economy will be down, reflecting the national recession–but not down as much [as the U.S.], reflecting our strengths.

Trade Executive: Unless the Congress comes to grips with the federal budget deficit, we are heading for harder times in Tennessee and nationwide. Our main tax problem is unpredictability and inconsistency.

Service Executive: I believe Tennessee will experience a decline in economic activity in 1991. Retail sales, construction and real estate activities will decline in 1991. Financial institutions in the state will continue to be adversely affected by real estate problems and the effect on their profitability.

Business Leader: What happens in Tennessee depends heavily upon what happens to the national economy. The metropolitan areas should weather an economic downturn better than the rural counties, because of greater diversification and less dependence upon manufacturing. Tennessee's economy is not likely to do as well in 1991 as in 1990. Education reforms and basic education and skill training should continue to be a top priority in any event.

Manufacturer: Because of the situation in the Middle East, the consumer is taking a cautious approach to purchasing anything. Because of the state's heavy dependence on sales tax, revenues will not be sufficient to pay for certain programs (education). The "tax structure" in this state must be reviewed and *revised.*

Finance Executive: Actually, I am not alarmed at the thought of a mild slowdown in 91, if we can keep it from going too far. A general tightening down will be healthy.

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Service Executive: Our location and access to markets [is] a strength. Our educational structure and level of educational achievement [is] a weakness.

Finance Executive: We will spend the next two years just trying to stay even. The increases in federal taxes and Tennessee's own regressive tax system will definitely affect our attempt at progress. Retail businesses will take the brunt when consumers spend their dollars on gasoline, heating fuel and other necessities.

Finance Executive: Tennessee had been making good economic progress and would have had a good 1991, but national problems will present us a real challenge to just hold even.

Trade Executive: In general, I feel Tennessee's economic situation will concur with the national forecast, which is recessional. However, with the expansion of the Nissan Smyrna plant and new production of Saturn in Spring Hill, I feel manufacturing will be on the up side for 1991. I feel retail demand will be soft and housing production will be down due to lack of demand and lack of capital funds. The banks will be very conservative concerning auto loans, etc.

Service Executive: Tennessee's outlook will be down because the increases in government spending for everything, including education, will force tax increases which will make Tennessee less attractive to new industry.

Finance Executive: I look for 1991 to be "flat," with real estate under pressure more than other areas. The restrictiveness of banks will be a big problem.

Service Executive: I expect a deep recession throughout 1991, with unemployment rising, and inflation approaching double digit. This is being brought about by steep reductions in housing and industrial construction starts and increased energy costs. Consumer demand will drop as business reduces employment and cuts back on wage increases. The only area of strength will be a stable state government willing to cooperate more with business to institute measures to promote energy conservation and consumer demand for goods and services.

Finance Executive: I feel 1991 will be a year of "retreating and regrouping" in Tennessee, but the excellent business and government cooperations will make our situation less serious than several other states.

Manufacturer: The 1991 economic outlook for Tennessee will be [slower] than in 1990. The oil situation will increase costs. Governing bodies need additional revenues to fund the upgrading of education. Reduced housing starts, bank financial conditions and general higher costs are weaknesses. A stronger and more helpful state government should emerge from the chaos of the recent past.

Manufacturer: Tennessee's overall outlook for 1991 is good. The state has a growing series of nodes of industrial activity, many of [which] are recent developments, such as the automotive assembly plants and supplier companies in Middle Tennessee. In industrial recruitment, Tennessee should emphasize its strengths--location, agriculture, good work force and way of life, proximity to markets, expanding service sector. How we deal with our pressing need to improve our educational system will be a key to our future economic growth as a state.

Manufacturer: I think if we use our location and climate in the U.S.A. we can become the hot spot for industry locating. Our weakness is our education system. We need to put everything into teaching our children to be ready for the high tech world.

Finance Executive: The outlook is soft and will remain so until stability is found for the defense effort. The financial service industry must be given attention that will show the strength of the commercial banking so consumers may find a level of comfort.

Manufacturer: In 1991, Tennessee should experience the same level of economic growth as 1990, no better or worse than the nation. However, without infrastructure changes in the education system, Tennessee will fall to the bottom of the desirable list for business expansion in the Southeastern U.S.

Manufacturer: Tennessee's diverse industries allow us some measure of protection. When the domestic market is "off," the international markets often allow us to have growth areas other states don't have.

THE U.S. ECONOMIC OUTLOOK

by John W. Mayo*

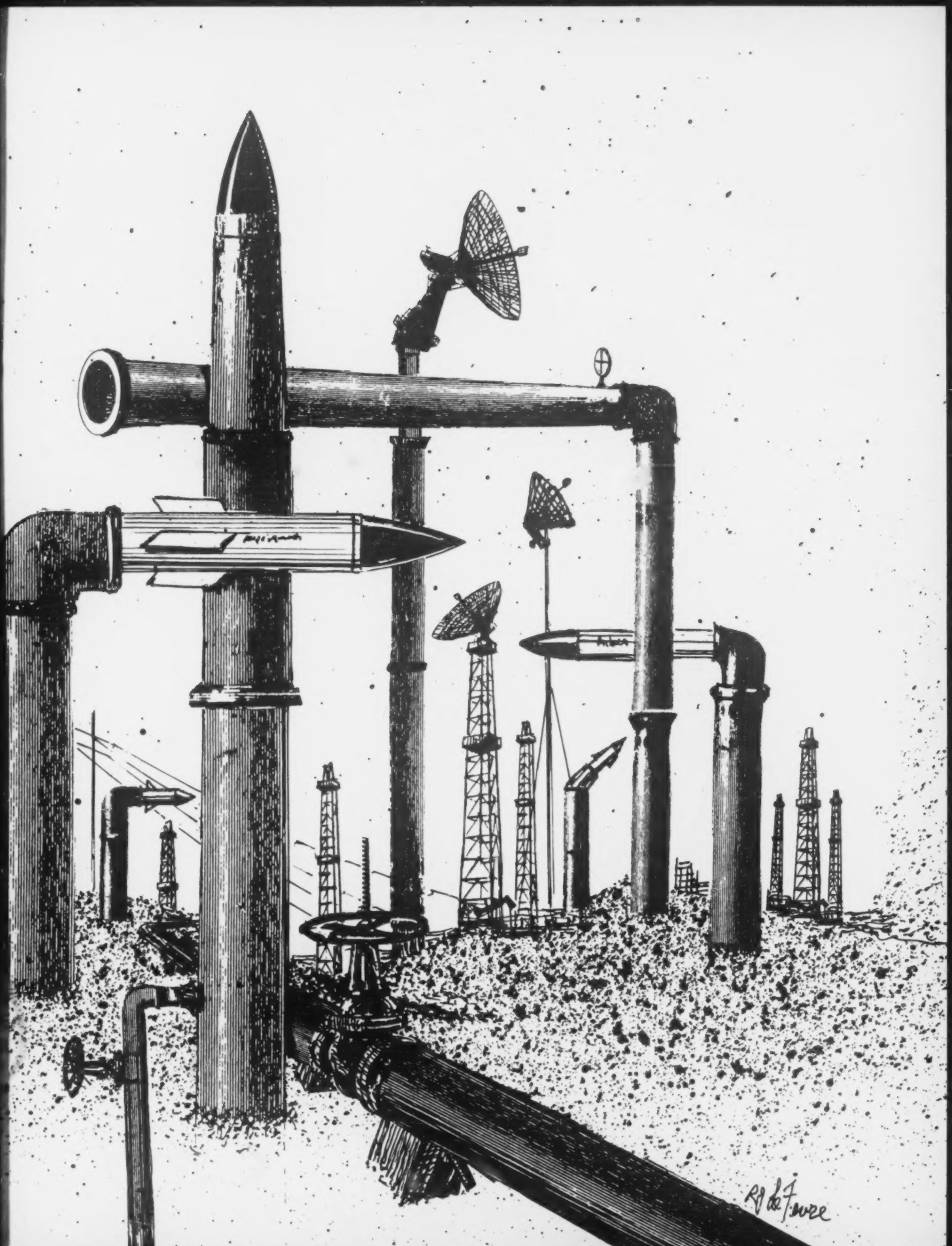
A recession, the Persian Gulf crisis, and a new budget plan have left the U.S. economy in a state of considerable uncertainty.

From the 1982 recession until 1990, the course of the U.S. economy had been relatively uneventful, with eight years of variable but continuous growth. Now, however, a recession, accompanied by the Persian Gulf crisis and a new budget plan, has left the U.S. economy in a state of considerable uncertainty and weighs heavily on the outlook for the Tennessee economy as well.

The war in the Mideast is likely to be a primary determinant of the nation's economic performance during 1991. The forecast in this article was developed prior to the outbreak of war and evidences the economic environment which *would* have occurred had war been postponed or prevented. Unfortunately, it is very difficult to predict the precise consequences in the absence of very good information on the war's duration and severity. This information will be known to us only as events unfold, meaning we must forecast its effects on the economy by considering alternative "what-if" scenarios regarding how the economy might respond to different war scenarios. The war probably has no long-term implications for the Tennessee economy, so the description of economic activity over long-time periods is unaffected. However, implications for the national economy in 1991 are much more profound. The effects of different possible war scenarios are so great, in fact, that a forecast based on a particular war scenario is likely to be considerably in error, so the approach must necessarily be to describe how the forecast already presented here will change in response to different war scenarios.

The economy has been influenced in several ways since Iraq's invasion of Kuwait. The

*The author is grateful to graduate assistant Larry Blank for his contributions to this article.



net effects have caused lower demand for goods and services and thus limit the economy's ability to produce, thereby worsening the recession. Offsetting these effects is the stimulus of increased government spending (though this has been limited to date). Tennessee does not benefit substantially from military spending, so the net effect on the state is probably a worsening of the recession, depending on the duration of the conflict. There are three main contractionary effects of the war. First, consumer confidence, a major determinant of consumer spending, has plummeted. Second, oil prices have spiked upwards, absorbing a bigger percentage of income and causing higher inflation rates. Finally, a considerable number of reservists have been called to active duty and this has taken their productive capacity away from the private economy. Further, while on active duty, these reservists often have lower income than their private-sector income, which causes lower demand for goods and services.

A Short War Scenario

A short, victorious war will certainly improve the 1991 economic picture. The major reason is that consumer confidence will be substantially improved because of patriotic feelings and because service men and women will return home from the Middle East. Stronger consumer confidence means increased spending, particularly for consumer durables like automobiles and refrigerators. A short war will also lead to lower oil prices, giving people more money to spend for commodities other than oil. (Each penny decline in the price of oil saves Tennesseans about $25 million.) In addition, lower oil prices translate into less inflation, and this can allow further interest rate declines. However, most of the oil price fall occurred in the weeks just before or just after the war's beginning, so substantial further declines are not likely.

The short war scenario means the recession will be briefer, and will end before summer. Nonetheless, 1991's economic growth will be modest, since the basic causes of relatively weak growth remain in place. Growth rates should be low compared with most post-recession bursts.

An Extended War Scenario

If the war extends beyond the short time discussed above (perhaps beyond three months), there will be increasingly negative repercussions for the economy relative to what is anticipated in the forecast. Consumer confidence will come back more slowly than expected, and the productive energies and spending of soldiers in the Middle East will be lost for a longer time. Large government spending to finance the war will increase the deficit (though the war is technically being financed off budget) and place greater upward pressure on interest rates. These factors will lead to lower demand for goods and services and will result in a weaker economy.

If hostilities continue for considerably longer (perhaps beyond eight months) it is likely that replacement of military supplies will be required, and this additional source of demand will be an economic stimulus. At this point the economic effects may once again swing to the positive side because of the need to produce war goods. Naturally this will mean a shift in the economy's character as more war-related goods and fewer consumption goods are produced. Also, higher inflation and higher interest rates may result.

A major interruption in oil supplies from the Middle East would complicate the scenario even more and would substantially worsen the economic environment. Likely implications include a substantial reduction in the economy's ability to produce because of oil shortages. Considerably higher oil prices would absorb some of people's buying power and reduce the demand for other goods. Inflation and interest rates will probably be much higher, and this will further inhibit demand. Taking oil from the strategic reserves would lessen the shortages and impacts, but with a major supply interruption, the price of oil would rise dramatically even if the reserves are used.

Both the medium- and long-term war scenarios are likely to be more negative for Tennessee than for the average state. One reason is Tennessee's concentration in production of consumer goods, which causes the state to be adversely affected by recessions. Further, a large share of soldiers in the Middle East have come from Tennessee. Finally, the state is not a large producer of war materials, so we will see less stimulus from large demand for military equipment and supplies.

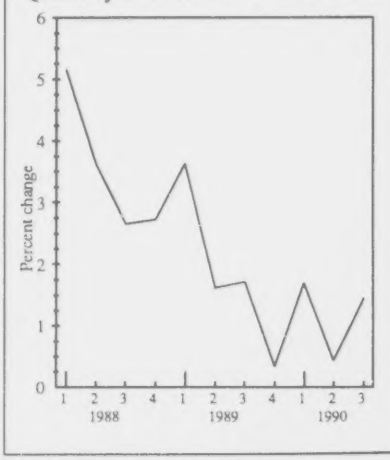
Events Leading to the Recession

Recent economic indices suggest that the growth in gross national product (GNP) became negative during the fourth quarter of 1990. Not only are events in the Gulf affecting the national economy, but recent developments in the federal government's fiscal and monetary policies are also a factor.

A contraction in the economy is typically not termed a recession until there have been two successive quarters of zero or negative growth in GNP. While aggregate economic growth in the United States has been anemic for the past year, the overall economy has maintained some modest progress until recently. (See Figure 1.) After a healthy growth rate of 4.5 percent in 1988, economic growth fell, but remained a respectable 2.5 percent in 1989.

But during 1990, even without the events in the Middle East, the national economic condition slipped closer to recession. After first quarter growth of 1.7 percent, the first serious signs of a possible recession emerged in the second quarter when GNP growth was a barely

FIGURE 1
Quarterly Growth Rates of Real GNP



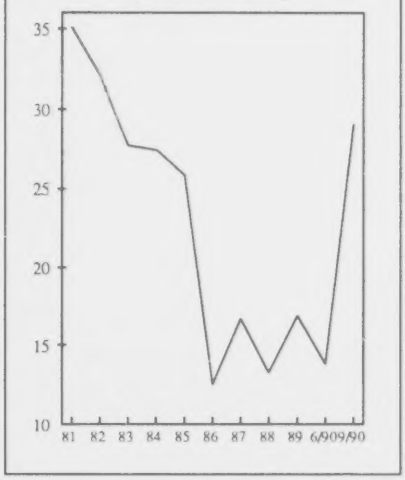
positive 0.4 percent. A modest improvement occurred in the third quarter of 1990, but a decline in GNP occurred in the fourth quarter of 1990.

The first fact pointing towards a recession was the decline in the two main indices of economic indicators. The U.S. leading index, which is typically thought to foreshadow the economic situation six to nine months in advance, fell in October for the fourth consecutive month. Eight of the leading index's eleven components were responsible for the decline. The second index, the U.S. coincident index, also fell in July, August, September, and October. The coincident index is constructed to reveal current economic activity. Four months of declines in these two indices is strong evidence that the economy is fading.

Economic Weaknesses

Evidence suggests considerable weakness in labor markets, and, in addition, total nonagricultural employment fell nationally in October for the fourth consecutive month. The recent slide in total employment reflects a sharp decline in the goods-producing sectors, including manufacturing employment, which has fallen continuously since February 1989. The very modest employment growth in the service sector, a sector traditionally insulated from short-run cyclical movements, suggests a broadly-based weakness in the overall labor market. It should be noted, however, that the weakness in the labor market does not appear to be geographically uniform. Some regions of the country–New England, for example–have seen dramatic declines in employment in recent months, while other regions such as Florida have continued to see modest employment gains.

FIGURE 2
Cost of Crude Oil Imports



Because consumer spending constitutes a large share (roughly 65 percent) of total economic activity, its importance to recent economic developments cannot be emphasized too strongly. Most analysts point toward the longevity of the economic expansion of the 1990s as directly attributable to the robust levels of consumer spending that occurred following the 1982 recession. During 1989, inflation-adjusted consumer spending grew by 1.9 percent. During 1990, however, consumer spending was anemic with one exception (June). And since the Iraqi invasion of Kuwait, consumer confidence has fallen considerably. However, these declines in consumer morale are not driven solely by events in the Middle East. Both the prospect of higher inflation and higher taxes have also contributed to the recent erosion.

The news has not been all bad. Even in the wake of the Iraqi invasion of Kuwait, automobile sales in the fall remained relatively strong in September and October, and real consumer spending increased in September by a respectable three-tenths of one percent. However, the acceleration of automobile sales may have been due to aggressive rebating and sales at the end of the 1990 model year, and it is likely that strong sales in the fall occurred at the expense of subsequent sales in the fourth quarter.

A final indication that national economic growth is likely to deteriorate is that several other industrial economies have already entered a slowdown. Canada, for instance, has officially entered a recession, with declines in GNP during the second and third quarters. Just as state economies are in part dependent upon the U.S. economic performance, so is the U.S. economy dependent on activity in the world economy.

Persian Gulf Crisis

The invasion of Kuwait by Iraq has created a high level of economic uncertainty that is difficult for an already lethargic economy to absorb. At the heart of these uncertainties is the matter of oil prices and their relationship to our economic growth and inflation. From a cost of $15.67 per barrel in July, in the three months following the invasion, crude oil prices ranged between $25 and $40 per barrel. (See Figure 2.)

Historically, oil price shocks have been associated with subsequent hard economic times. Both businesses and households are affected by increasing energy prices. These *micro*economic effects are translated into *macro*economic effects because reduced spending by consumers reduces aggregate economic demand. The subsequent softening of the economy will lead firms to reduce employment levels, creating further declines in the purchasing power of consumers. Moreover, because energy price increases are primarily driven by reductions in the supply of an important input, upward pressure is created on inflation as firms attempt to pass along energy price increases to consumers.

However, while consumers are understandably unhappy about paying more for petroleum-based products, the new prices, which mirror the higher opportunity costs of oil supply, serve a valuable purpose in well-functioning markets. Specifically, the price increase has the effect of allocating more supply to future periods when supplies are anticipated to be relatively scarce, therefore spreading the burden of the expected scarcity over time.

Monetary Policy

Actions by the Federal Reserve can have important impacts on national economic activity. However, the degree and direction of these policies are dependent on a number of factors. The Federal Reserve (Fed), under the chair of Alan Greenspan, has been very conservative in its reaction to changes in economic activity in the past. The Fed sees its primary job as preserving the value of the dollar; thus any action on the part of the Fed to ease credit should be interpreted as a major shift in beliefs about the future performance of the economy. Therefore, recent actions by the Fed evidences their concern that the present economic condition has intensified. In an attempt to ease

the availability of credit, the Federal Reserve moved to lower its key interest rate target, the Federal funds rate, in November, and significantly reduced reserve requirements on short-term CD's and Eurodollar deposits in December. It is normally suggested that such actions by the Fed will reduce interest rates, which in turn will stimulate investment and consumption. Some support for this view can be found in the recent drop in the prime interest rate, which is one of the major indicators of interest rate movements. However, the tightened regulatory environment, due primarily to the S&L debacle, as well as the recessionary "news," has forced banks to increase their excess reserve holdings. The ability of the Fed to affect bank lending, thus expanding the money supply, has therefore been eroded.

The ability of the Fed to create downward pressure on interest rates is also restricted in times of an increasing rate of inflation. Higher expectations for increases in the rate of inflation place upward pressure on interest rates to maintain lenders' expected real rate of return. Increases in the interest rate reduce the so-called *real* interest rate, which is the nominal interest rate minus the rate of inflation. Therefore, nominal interest rates must rise to maintain the real interest rate. The principal importance of the Fed policies in the coming months is twofold: first, the likelihood of a careful fiscal policy response by the federal government to recent economic events is extraordinarily constrained, throwing more of the counter-cyclical burden on the Fed; and, second, the Fed will necessarily have to walk a very fine line in coming months between the pitfalls of recession and the perils of inflation.

Fiscal Policy

The President and Congress agreed on a new budget plan last fall. It was originally projected to reduce the deficit by $40 billion in fiscal year 1991 and by $500 billion over the next five years. The plan is designed to reduce government expenditures on defense, farm subsidies, Medicare and other entitlement programs, and to increase certain taxes and user fees. However, these projections were made prior to the current erosion of economic activity and the rapidly escalating costs associated with Operation Desert Storm. Revised estimates call for a near record-breaking deficit for the current 1991 fiscal year.

A reduction and eventual elimination of deficit federal spending is thought to be a critical variable for long-term growth and prosperity. However, the process of expenditure cuts and tax increases is likely to have negative impacts on economic growth and employment, at least in the short term. Moreover, recent developments are having the effect of eroding the ability of the federal government to stay with the most recent budget plan.

As the costs of Operation Desert Shield and Operation Desert Storm have mounted, planned Defense Department expenditure cuts have been delayed. Now that war has actually erupted in the Persian Gulf, defense expenditures will surely escalate even more rapidly. Second, the estimated costs associated with the savings and loan bailout continue to rise. In particular, the slower economy and the increasingly depressed housing sector have led to more pessimistic estimates about the savings and loan bailout. Finally, the declining growth and likely recession of the national economy will exert upward pressure on welfare-related federal expenditures and will reduce revenues. Together, these forces severely constrain the latitude for the federal government to successfully engage in countercyclical fiscal policy in the near term.

Forecast

While there are a number of less-than-encouraging signs on the economic horizon, the most likely path for the near term is a short and relatively mild recession. Gross national product, the broadest measure of national economic output, suffered a -2.1 percent decline during the fourth quarter of 1990 and is expected to experience a further decline of 0.6 percent in the first quarter of 1991. However, it is expected to rebound during the second quarter of 1991, with positive growth continuing well into 1992. The civilian unemployment rate, which was 5.6 percent during the third quarter of 1990, is predicted to peak at 6.6 percent during the third quarter of 1991. This would imply a significant loss of employment but is still not considered a deep recession.

While the potential for a protracted and deep recession cannot be ignored, at least four factors currently point toward a brief and mild recession. First, unlike the deep recessions of 1973-75 and 1981-82, inflation has not risen to double-digit levels. This may allow the Fed additional latitude to cushion downward pressures through a more accommodating monetary policy. Second, as growth has slowed, firms have kept inventories considerably more disciplined than in the deep recessions in 1973-75 and 1981-82. Thus, unlike these prior recessions, it is not expected that there will be a major inventory correction to adjust to slower (or no) growth. Third, the U.S. dollar has weakened throughout the year relative to other major currencies. This weakness will tend to encourage export growth from the U.S. (one of the few bright areas among the current economic data), and depress import growth. Fourth, after the initial price escalation of petroleum products, a variety of oil suppliers have increased production. To the extent that these suppliers can (and will) continue to produce at current output rates, the impact on petroleum prices of the current Persian Gulf crisis could be smaller in magnitude than the 1973-75 and 1979 price shocks, but the ultimate ramifications will of course be determined by the events in the war with Iraq.

Thus, while we anticipate a shorter and milder recession than the norm, the prospects of a protracted war raise the possibility of a deeper and longer recession. The main sources of a more pronounced downturn likely would be rapidly escalating oil prices (or supply interruptions) and significantly higher inflation rates.■

ECONOMIC OUTLOOK FOR TENNESSEE

by David M. Mandy, Matthew N. Murray and Russell Dabbs

Agriculture Report
by Burton English and Kitty Hawk Loewen

If the U.S. slips further than expected in early 1991, the state will fall into a longer and deeper recession than is currently predicted.

The Tennessee economy has reached a critical juncture. Indications are that the slow growth experienced in the first half of 1990 has given way to a downturn which will extend into 1991. The severity and length of the apparent downturn will depend heavily upon the performance of the U.S. economy, which also performed sluggishly throughout 1990.

While the health of the Tennessee and U.S. economies tends to rise and fall in a roughly parallel fashion, recently Tennessee has experienced less economic growth than the U.S. average. Thus, if the U.S. slips further than expected in early 1991, the state will fall into a longer and deeper recession than is currently predicted.

Tennessee Economic Indicators

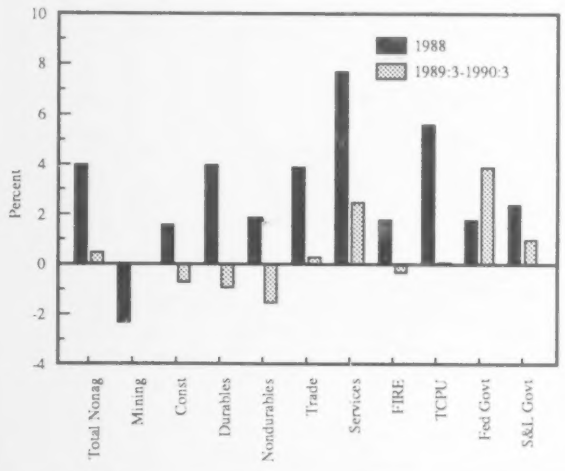
Preliminary evidence that Tennessee has entered into a recession came from the Tennessee index of leading economic indicators, which fell in October for the fourth straight month, while the Tennessee coincident index fell for the third straight month. (See page 48.) Both the leading and coincident indicators were down from their October 1989 levels.

The decline in Tennessee's leading index was less than 1 percent in October, at a seasonally adjusted annual rate, following a decrease of nearly 11 percent in September. Contributing to the latest decrease were the U.S. leading index and seasonally adjusted initial claims for Tennessee unemployment insurance. The U.S. leading index fell over 13 percent (SAAR) in October, the fourth consecutive month of decline. Meanwhile, initial unemployment claims rose by more than 10,000 over September's level, a substantial increase. The latest level represents an increase of over 40 percent from October 1989.

Helping to offset these factors were increases in the other three components of the leading index. Construction starts continued to run counter to the downward drift of the composite index, registering a third consecutive month of increase. Inflation-adjusted taxable sales and taxable mortgages each reversed their September declines, although both remain lower than their October 1989 levels. The apparent strength in the construction sector is puzzling, given recent weakness in construction employment.

The Tennessee coincident index stood at 124.6 in October, down from September's level of 125.1, which translates into a decrease of 4.6 percent when measured at a seasonally adjusted annual rate. The October level was the lowest for the index since November 1988. A major element of the Tennessee index, the U.S. coincident index, fell 11.1 percent (SAAR) in October, representing the fourth consecutive month of decline. Another component of the Tennessee index that contributed to the October decline was commercial and industrial electrical consumption. The Memphis help-wanted index, however, helped cushion the drop in the coincident index by posting its first increase since April.

FIGURE 1
Nonagricultural Employment by Industry
1988 and 9/89 - 9/90



Tennessee Employment

The Tennessee unemployment rate rose in December at a seasonally adjusted annual rate of 6.2 percent, continuing an upward drift. This follows rates of 5.9 and 5.7 percent in October and November, respectively. The latest figure is slightly above the 1989 average level of 5.1 percent. It is interesting to note that the Tennessee jobless rate rose above the national rate, which was 6.1 percent (SAAR) in December.

Nonagricultural employment in Tennessee fell in November for the third month in a row and now stands virtually unchanged from November, 1989 and considerably off from growth rates of 4 percent and 3 percent in 1988 and 1989, respectively. (See Figure 1.) The U.S. economy has also experienced a recent downward trend in nonagricultural employment, suffering five straight months of decline from July to November; nevertheless, national employment has performed somewhat better than Tennessee over the 1989:3-1990:3 period. Almost one quarter of nonagricultural employment in Tennessee is in the manufacturing sector. After moderate gains in 1988 and 1989, Tennessee manufacturing jobs are declining. Third quarter 1990 manufacturing employment fell for the second consecutive quarter, and is down by 1.25 percent from 1989:3. This also parallels a downward trend on the national scale.

Helping to offset the loss of jobs in the manufacturing sector has been moderate growth of employment in services. Service sector employment–which accounts for over 20 percent of nonagricultural unemployment–has risen by 2.5 percent since the third quarter of 1989. However, it is important to note that this rate of growth is significantly less than it was over the 1987-89 period, in which seasonally adjusted service employment rose on average over 6 percent per year.

Wholesale and retail trade sector employment also constitutes about 20 percent of nonagricultural employment. After gains in the three previous years, 1990 will reveal almost no change in jobs in this sector, since third quarter trade employment is nearly unchanged from 1989:3.

Government employment, the fourth largest component of total nonagricultural employment, is exhibiting slight growth in 1990. Federal civilian employment rebounded in 1990 after layoffs caused a reduction in federal jobs in Tennessee of almost 3 percent in 1989. Federal job growth is up 3.9 percent in 1990:3 from 1989:3. Much of this increase reflects temporary federal hiring for work on the 1990 Census. More significant, however, is employment on the state and local levels, which makes up over

three quarters of total government employment in Tennessee. State and local employment was up in the third quarter almost 1 percent (SAAR) compared to 1989:3. This rate of growth is somewhat lower than the 3 percent growth in 1989.

Two sectors which are a source of concern are construction and finance, insurance, and real estate (FIRE). Both show a slight drop in employment from 1989:3 to 1990:3. Construction employment fell in the second and third quarters of 1990, offsetting gains made in the first quarter: the expectation is that final numbers will reveal a very small increase in construction employment for 1990 as a whole. Meanwhile, the S&L crisis and the threat of similar difficulties in commercial banking have thrown the financial sector into anxiety nationwide. The effects are being felt in Tennessee. Strong FIRE job growth in 1987 has gradually dissipated. After very slight employment growth in 1989, employment will evidently post a small decline in 1990. Job loss in this sector may become more serious if the S&L and banking problems–which have so far been most pronounced in the Southwest–continue to intensify and spill over into the Southeast.

Sales

Nominal growth in Tennessee taxable sales fell at a seasonally adjusted annual rate of 4.4 percent in the third quarter of 1990, though sales were 1.5 percent higher than 1989:3. Final 1990 sales growth will fall well short of the 1987-89 average growth rate of 5.3 percent. The third quarter decline was broadly based. Auto dealers continued to be hit hard by declining sales, as they were in 1989. Sales of miscellaneous durables (including furniture, wholesale durables, building materials)–the third largest category of Tennessee taxable sales–dropped 14.3 percent (SAAR) in 1990:3. This is down 3 percent from 1989:3.

SHORT-TERM FORECAST

The short-term Tennessee economic forecast calls for a relatively brief recession in the last half of 1990, followed by a gradual, feeble recovery in 1991. (See Table 1.) If it materializes, the recovery during 1991 should just about offset the negative effects of the slump, so the expectation for 1991 is approximately the same level of economic activity as for 1990: essentially zero growth. A longer, deeper nationwide recession would jeopardize hopes for even the meager recovery forecasted for Tennessee in 1991.

Tennessee's Economic Structure

Historically, the Tennessee economy has been characterized by a greater concentration in manufacturing employment in contrast to the U.S. as a whole. While in recent years Tennessee has followed the national shift away from manufacturing toward greater service sector employment, manufacturing continues to be the largest single source of nonagricultural employment in the state. This is illustrated by Figure 2, which shows nonagricultural job distribution by sector for both Tennessee and the U.S. Typically, manufacturing is more sensitive to cyclical variations than is the service sector; thus, during a downturn, manufacturing employment tends to fall before service sector employment, and the decline tends to be sharper. Conversely, a resurgent economy tends to be led by increases in manufacturing employment which precede and are greater than increases in service sector employment. As a result, we would normally expect Tennessee to be more vulnerable to the 1991 recession than the

FIGURE 2
Nonagricultural Employment Distribution,
Tennessee and U.S., 1990

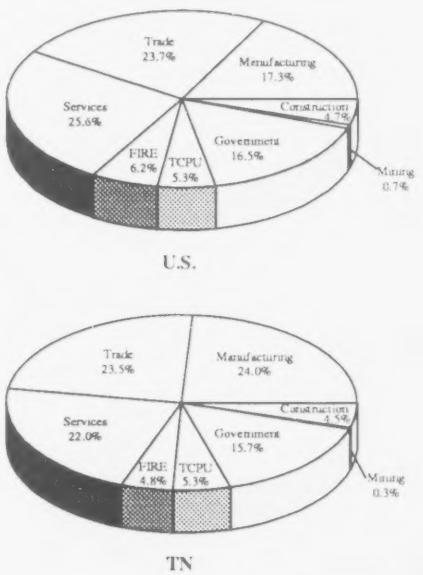


TABLE 1
Selected U.S. And Tennessee Economic Indicators, Seasonally Adjusted
Short-Term Outlook

	HISTORY		FORECAST - DATA									ANNUAL		
	199002	199003	199004	199101	199102	199103	199104	199201	199202	199203	199204	1990	1991	1992
US GNP (BIL82$) SAAR	4155.1	4173.7	4160.2	4149.0	4163.3	4192.6	4223.1	4254.8	4283.4	4311.7	4340.7	4159.9	4182.0	4297.6
% CHG PREV QTR SAAR	0.43	1.80	-1.29	-1.06	1.38	2.85	2.94	3.04	2.71	2.67	2.71	1.02	0.53	2.77
% CHG SAME QTR LAST YR	1.04	1.07	0.65	-0.04	0.20	0.45	1.51	2.55	2.89	2.84	2.78	1.02	0.53	2.77
US PERS CONS DEFL (1982=100)	135.2	136.9	139.7	141.5	142.8	144.2	145.7	147.2	148.5	150.0	151.6	136.5	143.6	149.3
% CHG PREV QTR SAAR	3.63	5.20	8.40	5.26	3.80	3.96	4.25	4.02	3.70	4.06	4.37	5.09	5.22	4.01
% CHG SAME QTR LAST YR	4.40	5.16	6.00	5.61	5.65	5.34	4.32	4.01	3.98	4.01	4.04	5.09	5.22	4.01
TN PERSONAL INCOME (MIL82$) SAAR	56288	55883	55218	55325	55517	55839	56198	56746	57114	57520	57949	55918	55720	57332
% CHG PREV QTR SAAR	0.03	-2.85	-4.68	0.78	1.39	2.34	2.60	3.96	2.62	2.88	3.02	0.03	-0.35	2.89
% CHG SAME QTR LAST YR	0.94	-0.26	-1.45	-1.70	-1.37	-0.08	1.78	2.57	2.88	3.01	3.12	0.03	-0.35	2.89
TN PERSONAL INCOME (MIL$) SAAR	76101	76517	77146	78293	79300	80538	81904	83520	84828	86287	87865	76296	80009	85625
% CHG PREV QTR SAAR	3.66	2.20	3.33	6.08	5.24	6.39	6.96	8.13	6.41	7.06	7.52	5.11	4.87	7.02
% CHG SAME QTR LAST YR	5.38	4.89	4.46	3.81	4.20	5.26	6.17	6.68	6.97	7.14	7.28	5.11	4.87	7.02
US PERSONAL INCOME (BIL82$) SAAR	3418.8	3416.3	3379.2	3376.4	3385.8	3403.6	3423.7	3456.6	3479.3	3502.6	3527.0	3404.8	3397.4	3491.4
% CHG PREV QTR SAAR	1.62	-0.29	-4.27	-0.33	1.12	2.12	2.38	3.89	2.66	2.71	2.81	0.84	-0.22	2.77
% CHG SAME QTR LAST YR	1.48	1.03	-0.35	-0.84	-0.96	-0.37	1.32	2.37	2.76	2.91	3.02	0.84	-0.22	2.77
TN NONAGRIC JOBS (THOUS)	2175.0	2173.8	2166.3	2171.6	2177.8	2188.8	2201.8	2212.6	2224.0	2235.6	2247.4	2176.1	2185.0	2229.9
% CHG PREV QTR SAAR	2.57	-0.23	-1.37	0.98	1.15	2.04	2.39	1.97	2.07	2.11	2.14	1.06	0.41	2.05
% CHG SAME QTR LAST YR	1.14	0.49	-0.07	-0.81	0.13	0.69	1.64	1.89	2.12	2.14	2.07	1.06	0.41	2.05
US NONAGRIC JOBS (MIL)	110.5	110.7	110.5	110.3	110.2	110.4	110.8	111.2	111.7	112.2	112.7	110.4	110.4	111.9
% CHG PREV QTR SAAR	2.31	0.40	-0.46	-0.88	-0.19	0.74	1.27	1.54	1.80	1.72	1.84	1.84	0.02	1.37
% CHG SAME QTR LAST YR	2.20	1.83	1.21	0.34	-0.29	-0.20	0.23	0.84	1.34	1.58	1.73	1.84	0.02	1.37
TN UNEMPLOYMENT RATE (%)	4.9	5.1	5.8	6.4	6.5	6.6	6.4	6.4	6.4	6.3	6.3	5.2	6.5	6.4
US UNEMPLOYMENT RATE (%)	5.3	5.6	5.9	6.4	6.8	6.9	6.9	6.9	6.8	6.7	6.6	5.5	6.8	6.7
BANK PRIME INTEREST RATE (%)	10.0	10.0	9.8	9.5	9.7	10.0	10.0	10.0	10.0	10.0	10.0	9.9	9.8	10.0
TN MFG JOBS (THOUS)	521.8	519.1	517.4	515.0	513.5	515.2	517.5	520.8	524.3	527.7	531.1	521.2	515.3	526.0
% CHG PREV QTR SAAR	-3.47	-2.02	-1.34	-1.78	-1.19	1.33	1.78	2.59	2.66	2.67	2.61	-0.49	-1.12	2.07
% CHG SAME QTR LAST YR	-0.46	-1.26	-1.51	-2.15	-1.58	-0.75	0.03	1.12	2.09	2.43	2.64	-0.49	-1.12	2.07
TN MFG AVG WEEKLY HOURS	38.7	39.5	39.1	39.4	39.5	39.5	39.5	39.5	39.5	39.6	39.6	39.0	39.5	39.6
% CHG PREV QTR SAAR	-2.02	8.31	-3.69	2.90	1.53	0.00	-0.08	-0.10	0.29	0.35	-0.12	-4.35	1.16	0.15
% CHG SAME QTR LAST YR	-6.03	-3.92	-1.82	1.27	2.17	0.13	1.08	0.34	0.03	0.12	0.11	-4.35	1.16	0.15
TN TAXABLE SALES (MIL$)	10406	10289	10285	10489	10655	10836	10976	11113	11275	11402	11574	41615	42955	45365
% CHG PREV QTR SAAR	-8.3	-4.4	-0.2	8.2	6.5	7.0	5.3	5.1	6.0	4.6	6.2	4.0	3.2	5.6
% CHG SAME QTR LAST YR	4.9	1.5	2.3	-1.4	2.4	5.3	6.7	5.9	5.8	5.2	5.5	4.0	3.2	5.6
TN TAXABLE SALES (MIL82$)	7697	7515	7361	7412	7459	7513	7531	7550	7592	7601	7633	30509	29915	30377
% CHG PREV QTR SAAR	-11.5	-9.1	-7.9	2.8	2.6	2.9	1.0	1.0	2.2	0.5	1.7	-1.0	-1.9	1.5
% CHG SAME QTR LAST YR	0.4	-3.5	-3.5	-6.6	-3.1	0.0	2.3	1.9	1.8	1.2	1.4	-1.0	-1.9	1.5

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U.S. economy. While it is too early to be certain, some evidence suggests this expectation may again hold true. Nonagricultural employment in the state fell significantly in the second and third quarters of 1990, while U.S. nonagricultural employment growth remained positive over the same period. Furthermore, the forecast calls for an upturn in nonagricultural employment in the first quarter of 1991, whereas the U.S. is not expected to show a turnaround until the third quarter. Nevertheless, the overall Tennessee unemployment rate is expected to remain below the national average throughout 1991.

Personal Income

After an increase of about 5 percent in 1990, nominal Tennessee personal income will rise at essentially the same rate in 1991. However, higher inflation in late 1990 is expected to spill over into 1991, causing the same nominal income growth to

correlate with lower real economic growth in 1991. Real (inflation-adjusted) personal income, after slight growth in the first quarter of 1990 and no growth in 1990:2, will display essentially no change for the year. The effects of the recession early in the year and the slow recovery will generate an estimated decline in real income of about 0.4 percent in 1991.

Inflation

Higher energy costs following the Iraqi invasion of Kuwait contributed to accelerated inflation in the third and fourth quarters of 1990. By mid-December, however, the benchmark crude oil price had–at least momentarily–stabilized well below the $40 per barrel high which it had reached soon after the invasion. As a result, the inflation forecast for 1991 is 5.2 percent, about the same rate as 1990. The short-term outlook for inflation may change rapidly and dramatically if the Persian Gulf war continues and results in skyrocketing oil prices, triggering much higher rates of inflation.

Employment

The unemployment rate in Tennessee is expected to rise to 6.5 percent in 1991, up from 5.2 percent for 1990. The rate will reach at least 6.6 during the third quarter. The Tennessee unemployment rate is predicted to remain near the U.S. rate throughout 1991. Thus, the unemployment rate will rise in 1991 as the total number of unemployed persons increases over 6 percent from 1990, due to cyclical layoffs resulting from the slump in the Tennessee economy. Figure 3 compares Tennessee's unemployment rate during the current and past recessions.

Figure 4 shows the distribution of nonagricultural job growth and loss by sector for years 1990 and 1991. Overall, nonagricultural employment is predicted to rise very slowly throughout 1991 following declines in the third and fourth quarters of 1990, with construction, manufacturing, and mining all experiencing net job loss in 1991. It is worth noting that construction employment has been weak since 1987. After a 1.5 percent rise in 1988, construction job growth was less than 1 percent in both 1989 and 1990. The recession will particularly affect construction in 1991; construction employment is expected to fall a steep 4.7 percent. To date, construction has been very slow for commercial and multi-family housing purposes. Construction of industrial and single-family housing buildings is likely to slide as well in the beginning of 1991. Mining, which constitutes only a small

FIGURE 3
Unemployment Rates
Past Recessions and 1990:3-1992:3 Forecast

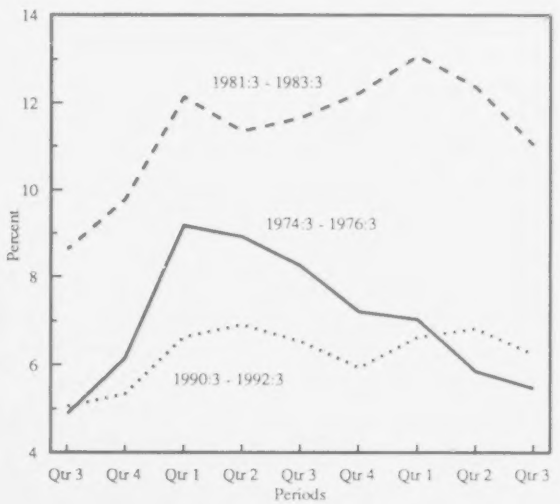


FIGURE 4
Tennessee Nonagricultural Employment Growth by Sector
1990 and 1991 Forecasts

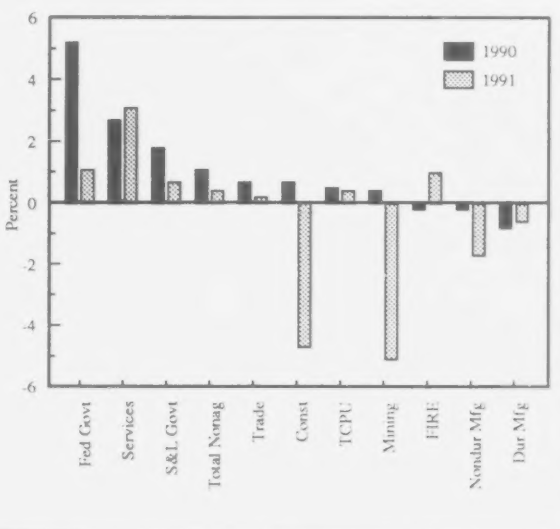


FIGURE 5
Nominal Taxable Sales
1991 Seasonally Adjusted Forecasted Growth Rates

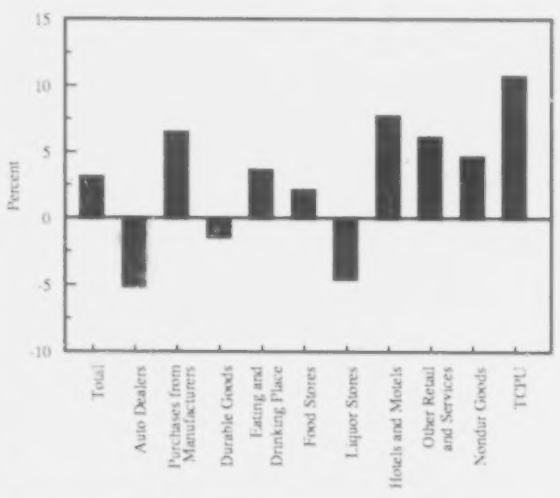
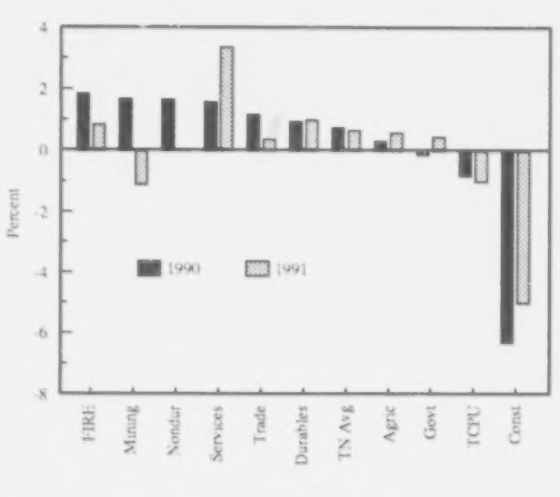


FIGURE 6
Tennessee Output Growth by Industry, 1990 and 1991



fraction of total employment, will continue to face job reductions in 1991 after posting a temporary gain in 1990.

After a moderate 2.2 percent average increase in job growth over the period 1987-89, manufacturing employment will experience two consecutive years of decline. Total manufacturing employment is expected to fall over 1 percent in 1991; the rate of decline will be greater for nondurable manufacturing employment than in durable manufacturing employment. The declines in two categories of nondurable goods manufacturing employment–apparel and textiles–do not simply reflect the cyclical effects of the 1991 downturn. Rather, these industries had been experiencing downward trends in employment even prior to the recession. Meanwhile, one of the few categories of durable goods manufacturing employment forecasted to increase in 1991 is transportation equipment. This is largely traceable to recent plant openings and employment commitments made by Saturn and Nissan.

Only the service sector is expected to make significant employment gains in 1991. The growth in service jobs will be a fairly strong 3 percent in 1991, after a 2.7 percent rise in 1990. However, these increases are notably less than the 6.5 percent average rate of growth over the period 1987-89. FIRE and federal, state, and local government employment will enjoy slight job growth of close to 1 percent in 1991.

Sales

Seasonally adjusted nominal sales will rise 3.2 percent in 1991 after a 4 percent gain in 1990. (See Figure 5.) However, it is desirable to abstract from nominal sales growth the effect of higher prices, particularly in light of the higher inflation rates expected in 1991. All of the nominal sales growth will reflect increased prices rather than the actual volume of goods sold. Real (inflation-adjusted) sales are forecasted to fall 2 percent in 1991. This consututes a larger decline than the expected decrease in personal income because fluctuations in durable sales across the business cycle are more pronounced than fluctuations in income, since consumers postpone large purchases during recessions.

Output

Tennessee nominal gross state product (GSP) is forecasted to rise 4.87 percent in 1991; this is approximately the same rate of growth expected for 1990. These rates are lower in contrast to the 7.72 percent average growth rate exhibited over the five-year period 1985-89. Adjusting for inflation, real GSP growth for

1990 and 1991 is expected to be only 0.76 and 0.68 percent, respectively. This follows average real GSP growth of 4.55 percent over the period 1985-89.

Figure 6 shows real GSP growth by sector for the years 1990 and 1991. Construction will display the most dramatic decline in output for these years. The largest sector, manufacturing, will exhibit slow growth, both in durable and in nondurable manufacturing. Only the service sector is expected to make significant gains in both 1990 and 1991; however, the forecasted growth rates for those years are substantially less than the 6.2 percent average rate of growth the service sector enjoyed over the 1985-89 period. Finally, agriculture, trade, and FIRE growth in 1990 and 1991 will be small, but positive. Again, the forecasted growth for these sectors will be notably less than their average growth rates over the period 1985-89.

TENNESSEE AGRICULTURE IN 1991

This year the Agriculture Sector will be profoundly affected by two major factors–the recently passed farm bill and the war in the Persian Gulf, either of which has the potential to change net farm income and shift agricultural production patterns.

The 1990 Farm Bill

The Food, Agriculture, Conservation, and Trade Act of 1990 contains several significant changes in policy, including triple-base, frozen-target prices and adjustable loan rates, and continuation of environmental protection policies.

Triple base. Triple base has been introduced as a new method of determining payments for producers participating in government programs under which producers maintain the same program base acreage as before, but their payment acreage is reduced by 15 percent of the program base. Under previous policy, a producer's payment base was equal to the program base minus set-aside acreage. Now, the payment base acreage (on which a producer can receive deficiency payments) is reduced by an additional 15 percent of the program base. Any program or non-program crop except fruits and vegetables can be planted on this 15 percent of the program acreage, but it will be ineligible for deficiency payments. However, if the *base* crop is planted on this 15 percent, then loan benefits can be applied to the acreage.

In addition, 10 percent of the program base is "flexible." That is, that percentage may be planted in any program or non-program crop, except fruits and vegetables. If planted in a program crop other than the base crop, the acres are eligible for loan benefits, but not deficiency payments.

Agriculture Department and market analysts' studies foresee shifts in crop acreages due to the new flexibility of triple base. U.S soybean acreage is expected to rise, as fewer acres are locked into program crops. However, soybean acreage is likely to decline in the South (where per-bushel production costs are higher) and shift to the Midwest. Cotton acreage may increase, corn acreage decrease, and wheat acreage remain stable, according to U.S.D.A studies.

Commodity policy. Target prices, the rate of compensation guaranteed to the farmer, for wheat, corn, cotton, and rice, are frozen at 1990 levels for the five-year period, 1991-1995. Crop deficiency payments for 1994-95, the government payment required to attain the target price, will be calculated on a 12-month rather than a 5-month basis. That is, crop deficiency payments will equal the target price, minus a 12-month average of market prices. Therefore, government payments on commodity programs for participating farmers will likely be lower than under previous policy.

Environmental policy. As with previous farm bills, environmental and conservation issues are addressed in the 1990 farm bill. The Conservation Reserve Program (CRP), initiated in the 1985 Food Security Act, is extended so that a minimum 40-million acre enrollment is achieved. The environmental subtitle also includes major new incentives to encourage tree planting. A wetland reserve of up to one million acres will be established, and a water quality incentive program will encourage producers to prevent contamination of ground and surface water on 10 million acres. Another incentive and assistance program is initiated for forestry protection.

Finally, the bill introduces nationwide standards for organically grown crops as well as guidelines for coordination of state programs for monitoring organic production.

The Persian Gulf Crisis

Higher oil prices in late 1990, caused by the Persian Gulf crisis, brought a rise in farm fuel costs, thus reducing net farm income for 1990. Input costs will probably rise into 1991, even if oil prices stabilize. Costs of fertilizers and pesticides, applied in greatest volume in the spring, will exceed 1990 levels, pushing expenses higher for 1991. Machinery use is also heaviest in spring, so if oil prices are high in early 1991 then farm

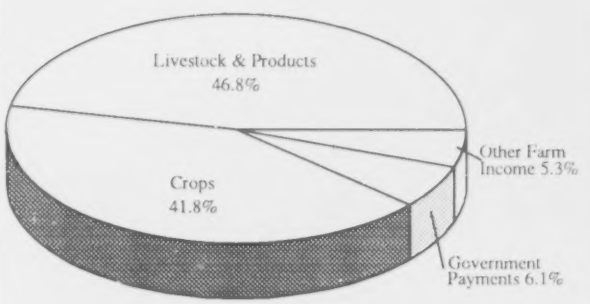
fuel cost increases will be greater than in the fall of 1990. U.S.D.A. forecasts that $30-per barrel oil in 1991 would increase manufactured input expenses (fuels, electricity, fertilizer, and pesticides) 6 to 7 percent over costs of oil at $20 per barrel. Forty-dollar-per barrel oil would cause these costs to be 12 to 13 percent higher than at $20 per barrel oil.

In addition to driving up farm expenses, the crisis has closed some markets for U.S. agricultural products, and the war with Iraq could have a considerable effect on exports of certain commodities. For instance, Iraq was the eighth largest market for U.S. wheat in 1989-90, importing about 3 percent of U.S. wheat and flour exports.

COMMODITY OUTLOOK

The primary crops grown in Tennessee include corn, cotton, greenhouse/nursery, soybeans, tobacco, and wheat. Livestock continues to be a major component of Tennessee agriculture, with beef cow-calf, dairy, and swine industries making significant contributions to the agricultural sector's income. In 1988, cash receipts from farm marketings in Tennessee totaled $2,308 million, with 42 percent from crop production, 47 percent from livestock enterprises, and the remainder from government payments and other sources (see Figure 7).

FIGURE 7
Sources of Cash Receipts
from Tennessee Farm Marketings, 1988



Total cash receipts were 2.05 billion dollars.
Source: Tennessee Agriculture, 1990.

Highlights for other farm marketings include:

- *Corn*: Overall production in Tennessee is down approximately 28% to 41 million bushels on 500,000 acres, but U.S. record corn yields are expected for this past year, with total production forecast 8 percent above the previous year. Exports will be down considerably due to good crops in the Soviet Union and elsewhere as well as to competitively priced wheat.
- *Cotton*: A below-average per-acre yield of approximately 457 pounds was harvested, but because of a 14 percent increase in planted acreage for 1990, the state's production of half a million bales still exceeded 1989's 476,000 bales. Throughout the 1980s, U.S. consumers displayed an ever-increasing preference for cotton. Because of the increased demand, the cotton market looks to remain strong in general, with relatively high prices. In response, cotton acreage is expected to rise in 1991.
- *Greenhouse/Nursery industry*: Marketings of greenhouse/nursery crops exceeded those of any other crop in Tennessee in 1989. In addition, Tennessee is the leading state in the U.S. nursery industry, with approximately 49,000 acres. Greenhouse and nursery operations are expected to increase production by approximately 3.5 and 2.5 percent, respectively. Cash receipts in 1991 are expected to be approximately $170 million.
- *Soybeans*: Growers in eastern and northwestern Tennessee produced good crops in general, while Middle Tennessee producers had a below-average year. Modest price increases are currently forecast for U.S. beans due to strong demand and reductions in carryover and South American production.
- *Burley tobacco*: An estimated yield of 2200 pounds per acre, the highest since 1978, pushed 1990 Tennessee burley production to approximately 85.8 million pounds. U.S. consumption of all tobacco fell 18 percent between 1981 and 1990. However, exports are rising, with cigarette exports up 171 percent from 1981 to 1989. As a result, growth in U.S. tobacco export demand should outpace the decline in the

domestic market, thus providing future markets for U.S. tobacco, in spite of reduction in domestic consumption.

- *Wheat*: After two prosperous years of wheat production in Tennessee, spring cold snaps, excessive rainfall, disease, and pests caused yields of about 34 bushels per acre, well below the ten-year average of 38.8 bushels per acre. Meanwhile, U.S. yields were up, and total world wheat production will probably reach a record level, reducing U.S. exports. Relatively low prices will allow livestock producers to increase their use of wheat for feed. This larger domestic feed use may nearly offset the loss of exports. Nonetheless, wheat prices should remain weak.

Livestock Production

- *Beef*: Cattle producers have faced favorable markets, with strong prices over the past year. In addition, forage and hay yields and quality improved for many producers, thus widening profit margins. U.S.D.A. foresees strong prices again in 1991, possibly posting modest gains. This is partly due to declining feed costs, the result of large feed grain stocks in the U.S. and abroad, and retail prices may remain at or near their 1990 levels.
- *Hogs and pigs*: Herd expansion throughout 1991 will eventually force hog and pig prices to decrease. However, the large grain supplies of the past season and resulting lower costs should allow modest returns to continue.
- *Dairy*: Milk cows on farms and milk per cow in Tennessee both increased in 1990 and profits improved for dairy producers in 1990 due to higher milk prices and ample feed supplies. Commercial use is predicted to increase for 1991 as well. However, these commercial sales are not expected to keep up with the augmented supply. Consequently, milk prices will not be able to maintain the higher levels and will probably weaken in latter 1991.

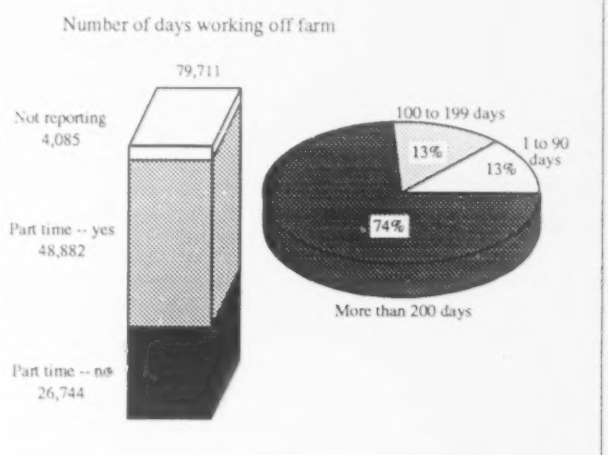
The Tennessee Farmer and Off-Farm Income

The average size of farms in Tennessee in 1987 was 147 acres, compared to 462 acres for the entire United States. According to census data, 72 percent of the farms in Tennessee had farm sales of $10,000 or less, and over 50 percent of the state's farmers work more than 200 days per year off the farm (Figure 8). With the downsizing of government programs and the substantial production capabilities of the nation, increasing employment alternatives in rural communities will be extremely important during the next five years.

THE LONG-TERM OUTLOOK FOR TENNESSEE

The long-term forecast, which extends from 1990 to 1999, is based largely on historical patterns of economic growth and transition. Although history exhibits patterns of economic growth and decline, it is exceedingly difficult to forecast business cycle patterns, since they typically result from unanticipated shocks to the economy. Although the current slowdown in economic activity is projected to continue through the early part of 1991, for the remainder of the long-term forecast period economic growth is projected to be modest and stable. Nonetheless, in addition to unsettling factors on the international scene, the economy is currently exposed to a series of risk factors, such as the poor health of the banking and insurance industries, that may cause the performance of the state economy to deviate from these projected trends. To provide a better understanding of the long-term forecast, a brief historical overview follows.

FIGURE 8
Off-Farm Work by Tennessee Farmers



A Historical Perspective

In the last thirty years there has been a significant restructuring of the state economy. Major demographic changes have taken place, government has expanded in size and scope, and the state is increasingly being integrated into the broader world economy.

Demographic changes. Between 1960 and 1990, the state's population grew from nearly 3.6 million to almost 5 million, reflecting a 38.9 percent increase. (Population growth for the U.S. over this same time period was 37.1 percent.) An expanding population has been an important source of economic growth, as the population increases have translated into increases in the state's labor force. In 1960, there were 924,000 nonagricultural jobs in the state; by 1989, the number of jobs had increased to nearly 2.2 million. Population growth is not expected to be as strong through the 1990s, and other sources of economic growth for the state must be identified. Prime candidates include a better quality workforce and new technologies to enhance productivity growth.

Accompanying this growth in the number of state residents has been an aging of the state's population. In 1965, 8.7 percent of the state's population was over age 65. By 1990, this figure had risen to 12.8 percent. Forecasts suggest that by the year 2000, 13.5 percent of all state residents will be over age 65. This shift will have a number of important implications for the state, including effects on health care delivery systems for the aged and impacts on retirement communities.

The state's rural orientation has also changed in the last three decades. In 1960, 47.7 percent of the state's population was categorized as rural. In 1970, the rural share of state population had fallen to 40.9 percent. Despite the trend towards increased urbanization, large areas of the state remain predominantly rural, and many of these regions have experienced inadequate economic development. Rural counties that are not contiguous to a metropolitan statistical area have grown very slowly, and in many instances they have contracted. A major issue confronting state policymakers is how to enhance the economic development of such regions.

Educational attainment. Although the state has made significant progress in upgrading both basic and higher education, there remains room for considerable improvement. In 1960, median years of educational attainment (for those age 25 and older) was 8.8, rising to 10.6 years in 1970 and 12.2 years in 1980. (These figures reflect the educational attainment of residents, some of whom were educated out of state.) Despite this improvement, the state consistently ranks low in the Southeast and across the U.S. in terms of various measures of educational performance. For example, in 1987-88, the state ranked 23rd out of 28 states that relied on the ACT college entrance exam. The state also consistently ranks near the bottom in terms of primary and secondary education spending per pupil. One of the most important public policy issues of this decade will be to provide further improvements and refinements to the state's system of education and ensure that all students have the skills and flexibility to adapt to a changing world. These provisions will be essential to the economic development of the state and the economic welfare of the state's residents.

Family structure and women in the labor force. Family structure and the labor force participation of women have changed significantly over time. In 1960, average household size in Tennessee was 3.6 persons. By 1985, there were, on average, 2.65 persons per household. In 1980, in 52 percent of U.S. families, both the husband and wife worked , and by 1988 this figure had risen to 63 percent. The number of single-parent homes has increased 23 percent in the U.S. during the 1980s alone.

Female labor force participation rates have shown a steady increase, although rates of growth in female labor force participation are expected to diminish somewhat through the 1990s. Nonetheless, over the next decade, women will account for two-thirds of the net increase in jobs for the U.S. economy. For the U.S. as a whole, 35.7 percent of all females capable of working were labor force participants in 1960; by 1980, this rate had increased to 51.7 percent. In Tennessee, between 1980 and 1987, the labor force participation rate of females increased from 49.5 percent to 54.5 percent.

The typical family in Tennessee is now smaller, the number of single-parent households has increased, and it is more common to observe dual earners in the traditional family unit. It has become increasingly important to meet the changing needs of the family to ensure that those with the desire can acquire gainful employment. The new workfare initiatives implemented in other states (such as California and Massachusetts) may hold promise by overcoming the narrowness and inherent weakness of traditional welfare programs. Child care assistance is also crucial to many families, and expanded resources are now available through the $2.5 billion federal Child Care and Develop-

ment Block Grant and the State's Child Care Loan Guarantee program.

Changes in the Economy

One of the most important economic changes that has taken place in the state has been the restructuring of industry in terms of output and employment. In Figure 9, a line chart illustrates the percent distribution of nonagricultural gross state product for four key sectors for the period 1963 to 1990–durable goods manufacturing, nondurable goods manufacturing, trade (wholesale and retail) and services. Nondurable goods manufacturing accounted for 12.8 percent of all state (nonagricultural) output in 1963 and exhibited modest growth in relative importance until peaking in 1983 at 15.2 percent. In 1984 the relative share of output began to fall, declining to under 12 percent after 1986. Durable goods manufacturing has grown in relative importance, from 9.8 percent in 1963 to 12.1 percent in 1980. Growth following the recession of 1982 was particularly strong, and by 1990 durable goods production accounted for 17.6 percent of state output. Overall, manufacturing accounted for 22.6 percent of the state's nonagricultural output in 1963, rising to 29.4 percent by 1990. There is no evidence from these long-term data that the state is "de-industrializing."

Growth in the relative importance of the trade and services sector has been relatively steady over time. In 1963, trade accounted for 17.6 percent of state output, and services accounted for 12.6 percent. By 1990, the relative contributions increased to 20.5 and 15.4, respectively. Note that by this measure, service sector growth has been modest, though it has been very strong when measured by employment.

Structural change in the state economy is more evident in Figure 10, where the shares of (nonagricultural) employment for the same four sectors as discussed above are illustrated for the period 1960 to 1999. Combined, these four sectors accounted for 67.9 percent of all state nonagricultural jobs in 1960, rising slightly–to 69.4 percent–in 1990. The relative share of state

FIGURE 9
Tennessee Nonagricultural Output by Sector
(Percent)

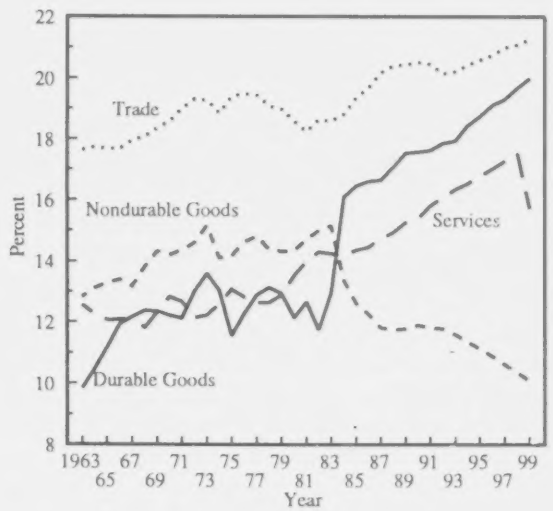
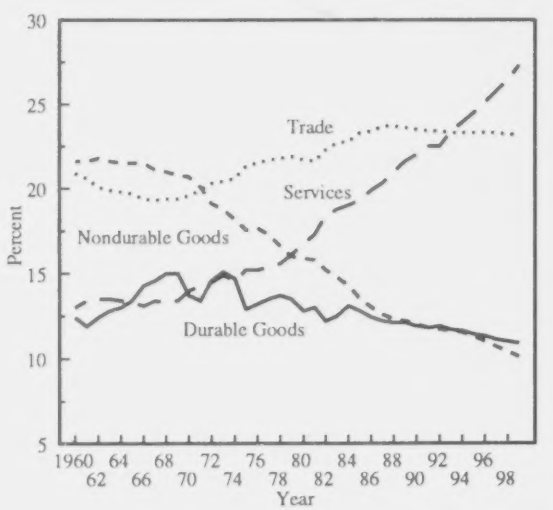


FIGURE 10
Tennessee Nonagricultural Employment by Sector
(Percent)

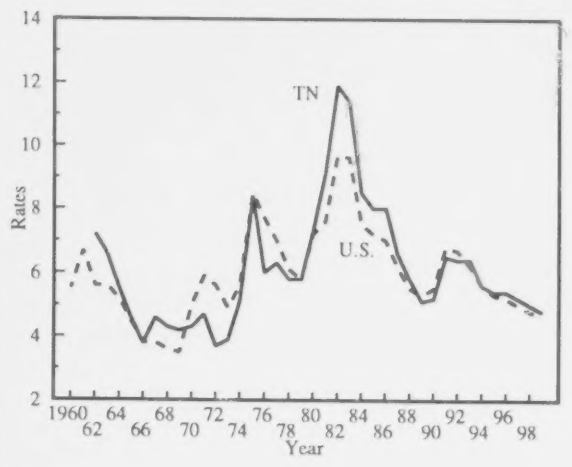


employment in nondurable goods manufacturing has fallen quite dramatically in the last three decades, from 21.6 percent of all state jobs in 1960 to 12.0 percent in 1990, and the decline is projected to continue through the 1990s. It is this trend that observers typically refer to when discussing structural change in Tennessee's economy. However, while the share of employment in nondurable goods manufacturing has been declining (Figure 10), the share of state output produced by this same sector has not been in long-term decline (Figure 9). Moreover, between 1960 and 1990 the level of employment in this sector rose from 199,800 to 262,000. (Note that nondurable goods employment peaked in 1973 at 288,000.) Hence structural decline in nondurable goods manufacturing relates largely to its more dramatic decline in relative, as opposed to absolute, importance. (This will change through the decade of the 1990s as nondurable goods employment declines to 258,000 by 1999.)

Durable goods employment constituted 12.4 percent of all state jobs in 1960, 13.4 percent in 1970 and 11.9 percent in 1990. During this same period, durable goods production has increased as a share of total state activity.

Employment in trade has risen slightly over time, from 20.9 of state employment in 1960 to 23.5 percent of state employment in 1990. Service sector employment has shown dramatic growth as a share of state employment, rising from 13.0 percent in 1960 to 22.0 percent in 1990. The level of services employment has increased from 120,300 in 1960 to 477,800 in 1990, and dramatic increases are projected for the long-term outlook period. Despite this strong growth in service sector employment, the share of output contributed by this sector has not increased nearly as rapidly suggesting limited productivity gains.

FIGURE 11
Tennessee and U.S. Unemployment Rates



As is evident from Figure 11, Tennessee's cyclical unemployment pattern for 1960 to 1999 is similar to that of the U.S., although somewhat more exaggerated. Through the decade of the 1970s, the state tended to experience lower rates of unemployment than the nation as a whole. The experience of the 1980s was quite different, with the U.S. economy benefitting from relatively lower rates of unemployment than Tennessee. This reflects the fact that Tennessee was (and is) more manufacturing-oriented than the U.S. economy and has experienced more pronounced structural change and structural unemployment than the national economy, particularly in the nondurable goods sector. The expectation is that during the period of the 1990s the state's unemployment rate will more closely track national rates of unemployment. The improved performance of the state's unemployment rate reflects the exit of many inefficient firms from the economy and the elimination of many unstable jobs, as well as improved efficiency and adaptability on the part of those firms that remain.

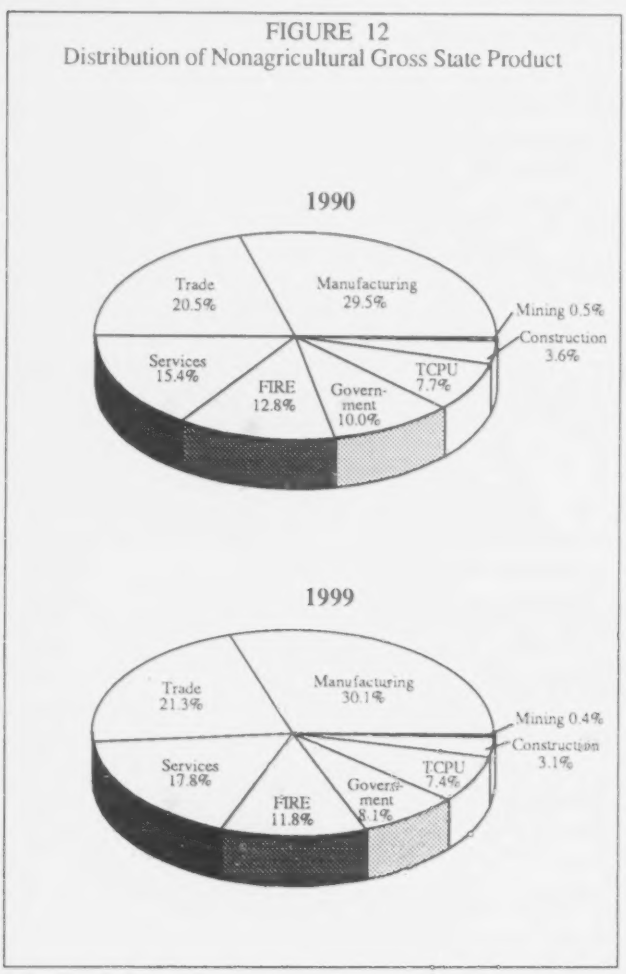
A final economic consideration is the trend in income growth. In 1960, per capita personal income for the state was $4,794 (in 1982 dollars). By 1970, it had increased to $7,346, reflecting a 53.2 percent increase. During the decade of the 1970s, inflation-adjusted per capita income increased 26.2 percent to $9,272. Growth was somewhat weaker during the 1980s, as per capita personal income grew 21.0 percent to $11,217. (Growth through the forecast period is expected to be weaker still, increasing 15.5 percent to $12,952.) The average annual wage of a Tennessee worker was $12,387 in 1960 (in 1982 inflation-adjusted dollars). The average wage rose a total 18.3 percent during the decade of the 1960s, 29.3 percent for the 1970s, and at an anemic rate of 0.8 percent during the 1980s. Advancements in productivity will be needed to provide stronger gains in earnings and well-being.

The Long-Term Forecast

The long-term outlook for the state of Tennessee includes a continuation of the current economic slowdown through

the early portion of 1991. After this, the economy is projected to grow at favorable rates for the remainder of the decade. The economy faces a number of risk factors that, if realized, could turn the current slowdown into a much deeper and broader recession or cause slowdowns in economic activity at a later point in the decade. There are a number of debt-related risks or problems, including the savings and loan crisis, weakness in the banking and insurance industries, related weaknesses in real estate and construction, and the federal budget deficit. There are also real and psychological risks associated with the continued crisis in the Persian Gulf. The inherent uncertainty associated with these factors makes it impossible to include them explicitly in the long-term forecast.

FIGURE 12
Distribution of Nonagricultural Gross State Product



Selected Economic Indicators

Table 2 presents a number of key economic indicators for the U.S. and Tennessee economies for the long-term outlook period, 1990 to 1999. U.S. gross national product (GNP) will grow at a 2.4 percent compound annual rate (in inflation-adjusted terms), and gross state product (GSP) will grow at nearly a 3.2 percent compound annual rate (also in inflation-adjusted terms) over the forecast horizon. Following the current economic slowdown (i.e., after 1991), GNP growth will exceed 2.25 percent per year; annual growth in GSP is forecast to be about a percentage point higher than growth in GNP. The superior performance of the state economy versus the national economy is attributable to relatively higher rates of labor force growth and a relatively larger manufacturing base (where productivity advances are more pronounced) in Tennessee. While these rates of growth fall short of the rapid growth during the 1960s and early 1970s, they nonetheless indicate a strong and growing economy.

Inflation, as measured by the implicit price deflator, will accelerate only slightly relative to the recent experience of the late 1980s, increasing by approximately 4 to 4.5 percent per year over the forecast period. The economy's ability to absorb price increases resulting from Iraq's invasion of Kuwait and the Federal Reserve's determination to hold the reins on inflation suggests that these are realistic inflation forecasts.

Personal income growth will be negative in 1991 as a result of the continued weakness in the economy, but following 1991, growth in personal income will be nearly 3 percent in Tennessee, and will slightly exceed the growth in personal income for the U.S. economy.

Demographic factors and other forces will diminish job growth between now and 1999, relative to historical periods. Reduced growth in labor force participation rates, in large part resulting from the end of the baby boom generation's entrance to the labor force, will translate into lower rates of job creation. Nonetheless, Tennessee will realize a respectable 1.8 percent compound annual growth rate in employment, versus 1.5 percent for the U.S.

Unemployment will peak at 6.5 percent for the state in 1991 and will remain relatively high until recessionary forces are eliminated from the economy. By the end of the decade, unemployment rates for both the U.S. and Tennessee are expected to fall to under 5 percent, though rates could rise during

TABLE 2
Selected U.S. And Tennessee Economic Indicators
1990-1999

		FORECAST-DATA								
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
US GNP (BIL 82 $)	4159.9	4182.0	4297.6	4419.8	4548.8	4673.2	4779.9	4897.0	5029.5	5161.3
PERCENTAGE CHANGE	1.02	0.53	2.77	2.84	2.92	2.74	2.28	2.45	2.71	2.62
TN GSP (MIL 82 $)	72430.2	73736.0	76547.1	78632.3	80832.4	82814.5	85010.5	87128.5	89563.8	92040.5
PERCENTAGE CHANGE	1.08	1.80	3.81	2.72	2.80	2.45	2.65	2.49	2.80	2.77
US GNP (BIL. $)	5601.5	5999.5	6460.2	6909.4	7404.3	7913.1	8458.3	9032.9	9660.6	10316.8
PERCENTAGE CHANGE	6.74	7.11	7.68	6.95	7.16	6.87	6.89	6.79	6.95	6.79
TN GSP (MIL. $)	94168.7	99833.6	107785.9	115387.8	123981.1	133008.5	142916.8	153374.9	164864.2	177188.3
PERCENTAGE CHANGE	5.14	6.02	7.97	7.05	7.45	7.28	7.45	7.32	7.49	7.48
IMPLICIT DEFLATOR,GNP	131.6	137.5	142.8	148.6	155.2	162.1	169.4	176.9	184.6	192.7
PERCENTAGE CHANGE	4.20	4.50	3.85	4.06	4.43	4.47	4.51	4.41	4.35	4.38
IMPLICIT DEFLATOR,GSP	130.0	135.4	140.8	146.7	153.4	160.6	168.1	176.0	184.1	192.5
PERCENTAGE CHANGE	4.01	4.14	4.00	4.21	4.52	4.71	4.67	4.71	4.57	4.58
US PERS CONS DEFL (1982=100)	136.5	143.6	149.3	155.8	163.3	171.0	179.0	187.3	196.0	205.1
PERCENTAGE CHANGE	5.09	5.22	4.01	4.35	4.80	4.71	4.68	4.65	4.63	4.63
TN PERSONAL INCOME (MIL. $)	76296	80009	85625	91859	99008	106523	114553	123171	132484	142595
PERCENTAGE CHANGE	5.11	4.87	7.02	7.28	7.78	7.59	7.54	7.52	7.56	7.63
US PERSONAL INCOME (BIL $)	4646.0	4878.3	5214.3	5599.1	6021.8	6462.6	6921.2	7410.3	7930.1	8480.4
PERCENTAGE CHANGE	5.97	5.00	6.89	7.38	7.55	7.32	7.10	7.07	7.01	6.94
TN PERSONAL INCOME (MIL 82 $)	55911	55723	57317	58946	60623	62293	63992	65747	67588	69524
PERCENTAGE CHANGE	0.02	-0.34	2.90	2.81	2.85	2.76	2.73	2.74	2.80	2.87
US PERSONAL INCOME (BIL 82 $)	3404.7	3397.6	3491.7	3592.9	3687.1	3779.2	3866.3	3955.5	4045.6	4134.7
PERCENTAGE CHANGE	0.84	-0.21	2.77	2.90	2.62	2.50	2.30	2.31	2.28	2.20
TN NONAGRIC JOBS (THOUS)	2176.1	2185.0	2229.9	2266.4	2311.6	2357.4	2404.2	2451.8	2503.5	2558.1
PERCENTAGE CHANGE	1.06	0.41	2.05	1.64	1.99	1.98	1.99	1.98	2.11	2.18
US NONAGRIC JOBS (MIL.)	110.4	110.4	111.9	114.1	116.3	118.3	120.1	122.0	123.9	125.8
PERCENTAGE CHANGE	1.84	0.02	1.37	1.89	1.98	1.72	1.49	1.60	1.58	1.47
TN UNEMPLOYMENT RATE (%)	5.2	6.5	6.4	6.4	5.6	5.4	5.4	5.2	5.0	4.8
US UNEMPLOYMENT RATE (%)	5.5	6.8	6.7	6.2	5.6	5.3	5.2	5.0	4.8	4.7
BANK PRIME INTEREST RATE (%)	9.9	9.8	10.0	10.0	10.3	10.6	11.0	10.8	10.3	9.9
TN MFG JOBS (THOUS)	521.2	515.3	526.0	529.5	534.0	535.1	536.1	535.4	536.2	536.9
PERCENTAGE CHANGE	-0.49	-1.12	2.07	0.66	0.86	0.20	0.18	-0.11	0.14	0.13
TN MFG AVG WEEKLY HOURS	39.0	39.5	39.6	40.5	41.1	41.2	41.1	41.1	41.1	41.1
PERCENTAGE CHANGE	-4.35	1.16	0.15	2.41	1.39	0.20	-0.10	0.02	-0.09	0.08
TN TAXABLE SALES (MIL $)	41615	42955	45365	48113	51393	54686	58106	61783	65819	70170
PERCENTAGE CHANGE	4.0	3.2	5.6	6.1	6.8	6.4	6.3	6.3	6.5	6.6
TN TAXABLE SALES (MIL 82 $)	30496	29917	30378	30874	31468	31980	32459	32979	33578	34212
PERCENTAGE CHANGE	-1.0	-1.9	1.5	1.6	1.9	1.6	1.5	1.6	1.8	1.9
TN MFG OUTPUT/EMPLOYEE (THOUS 82 $)	39.5	40.7	41.8	42.7	43.7	44.7	45.9	46.9	48.1	49.3
PERCENTAGE CHANGE	1.83	3.10	2.77	2.10	2.39	2.22	2.66	2.34	2.57	2.35
US MFG OUTPUT/EMPLOYEE (THOUS 82 $)	48.8	50.4	52.4	53.4	54.9	56.6	58.4	60.3	62.2	64.1
PERCENTAGE CHANGE	3.01	3.38	3.84	2.00	2.85	3.06	3.13	3.20	3.15	3.17
TN AVERAGE ANNUAL WAGE,NONAG ($)	20750	21686	22715	23830	25082	26453	27953	29557	31267	33083
PERCENTAGE CHANGE	3.05	4.51	4.74	4.91	5.25	5.46	5.67	5.74	5.79	5.81
TN AVERAGE ANNUAL WAGE,NONAG (82 $)	15206	15104	15211	15292	15358	15469	15615	15777	15951	16130
PERCENTAGE CHANGE	-1.94	-0.67	0.71	0.53	0.43	0.72	0.94	1.04	1.10	1.12

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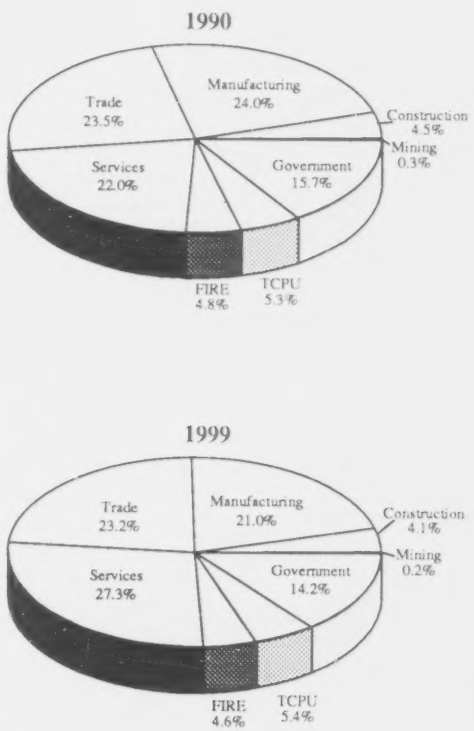
FIGURE 13
Distribution of Nonagricultural Employment



economic downturns. (See Figure 11 for long-run trends in the U.S. and state unemployment rates.)

Sectoral Production Outlook

Tennessee's dominant manufacturing sector will experience modest growth in relative importance over the decade, slightly increasing the state's potential sensitivity to cyclical variations in the economy. As illustrated in Figure 12, manufacturing accounted for 29.5 percent of the value of all goods and services produced in the state in 1990; by 1999, manufacturing will represent 30.1 percent of all state output. Absolute growth in manufacturing, or the (inflation-adjusted) increase in the value of goods and service produced, will amount to 3.4 percent on a compound annual basis. This exceeds overall growth in GSP by only 0.2 percentage points.

Durable goods manufacturing will increase in relative importance, from a 17.6 share of state output in 1990 to 20.0 percent in 1999. Nondurable goods production will fall in relative importance, from 11.9 percent to 10.1 percent of state production. All (broad) individual sectors within durable goods manufacturing will experience growth in the value of inflation-adjusted production. The most rapid growth will be experienced in nonelectrical machinery, transportation equipment and instruments. In the nondurable goods manufacturing sector, the tobacco industry will contract slightly and chemicals output will fall significantly–by 11.5 percent from its 1990 level.

Growth in the relative importance of production in the manufacturing sector–as well as growth in trade and services–will be at the expense of construction, mining, FIRE (finance, insurance and real estate), TCPU (transportation, communications and public utilities) and government, all of which experience declines in their relative shares of state production. Despite these declines in relative importance, the only sector to suffer from an absolute contraction of output is the mining sector, where the level of output will fall by 0.7 percent between 1990 and 1999.

Sectoral Employment Outlook

Nonagricultural employment is forecast to grow at a 1.8 percent compound annual rate between 1990 and 1999, reflecting the creation of 382,000 new jobs for the state economy. A total of 219,500 of these new jobs will arise in the service sector alone. Growth in the manufacturing sector will contribute an additional 15,700 new jobs.

The distribution of nonagricultural employment by sector for 1990 and 1999 is presented in Figure 13. Manufacturing sector employment, which will account for 24 percent of all jobs in 1990, will grow at a 0.3 percent compound annual growth rate over the forecast period. By the end of the decade, however, the share of state employment in manufacturing will decline from 24 percent to 21 percent, reflecting relatively higher rates of

employment growth for other sectors of the economy. Overall growth in manufacturing is dominated by the durable goods sector, which will generate 18,800 new jobs; the more anemic nondurable goods sector will lose 3,100 jobs. (Note that while employment in nondurable goods manufacturing is declining in absolute terms, the inflation-adjusted value of production in the same sector is increasing over the forecast period.)

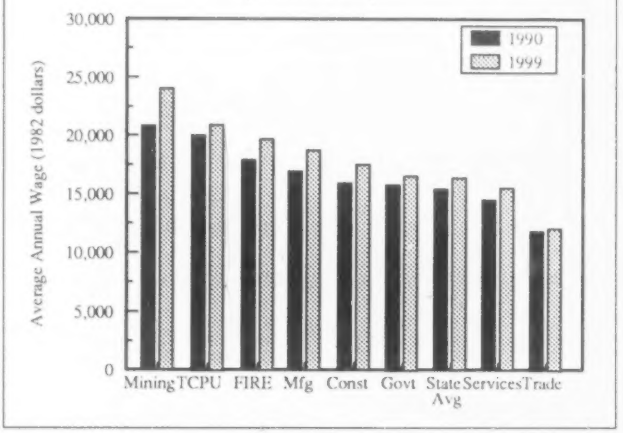
Within the durable goods sector, lumber and wood, stone, clay and glass, primary metals and electrical machinery will lose employment totalling 5,800. These same sectors will experience positive output growth over the forecast horizon. The remaining sectors within durable goods manufacturing will experience positive employment growth. Transportation equipment and instruments will be particularly strong, creating 18,100 new jobs. In the nondurable goods sector, tobacco and petroleum refining will have stable employment; small losses will be experienced in food (1,100 jobs) and apparel (2,200 jobs), and somewhat larger losses in textiles (4,000 jobs) and chemicals (9,300 jobs). The remaining sectors will witness positive growth.

With the exception of the mining sector, where over one-third of 1990 jobs will be lost by 1999, all other broad sectors of the economy are forecast to have positive employment growth. In the construction sector, which continues to experience weakness, there will be 6,700 new jobs by 1999. Nonetheless, as with manufacturing, job growth in construction falls behind average growth for the state, producing a decline in construction's share of employment from 4.5 percent in 1990 to 4.1 percent in 1999 (see Figure 13). The largest growth, by virtually any employment measure, will be in services, where 219,500 new jobs will be created, reflecting a 4.3 percent compound annual growth rate. In 1990, services accounted for 22 percent of all jobs in the state; by 1999, services will comprise 27.3 percent of all jobs. A continuation of past trends would give rise to substantial employment gains in health care, business and legal services. Job creation in TCPU, trade and FIRE will also be strong, increasing at 2.0 percent, 1.7 percent and 1.5 percent compound annual rates, respectively.

Income, Wages and Salaries

Inflation-adjusted personal income for Tennessee is projected to grow at a 2.5 percent compound annual rate by 1999. While this compares favorably to 2.2 percent growth in personal income for the U.S. economy, growth will be slower than for any of the three previous decades. Inflation-adjusted per capita personal income growth, which takes into account the influences of inflation and a growing population, is forecast to be 1.6 percent, again comparing favorably to U.S growth forecast at 1.3 percent. Transfer payments within the state will increase at the inflation-adjusted rate of 2.2 percent.

FIGURE 14
Tennessee Average Annual Wage
(1982 dollars)



Sectoral inflation-adjusted wages and salaries for 1990 and 1999 are presented in Figure 14. The current (nonagricultural) state average is $15,420. The highest wage sector is mining ($20,827), in part reflecting high productivity and greater employment injury risk for miners. Next, in order, are TCPU ($20,079), FIRE ($17,903) and then manufacturing ($16,930). The lowest wage sector is trade, including wholesale and retail trade, where the average wage is only $11,855.

On average, inflation-adjusted wages will increase by only 6.0 percent between 1990 and 1999, reflecting a meager 0.6 percent compound annual rate of growth. Those sectors with relatively high (low) wages in 1990 will also have relatively high (low) wages in 1999. Weakest wage and salary growth will be in the trade and government sectors, where growth will be 2.0 percent and 3.9 percent, respectively. The most dramatic growth will be in the high-wage mining sector, where the 1999 wage will be $24,030 (in 1982 dollars), reflecting 15.4 percent growth from 1990. The average wage in manufacturing will rise to $18,799 in 1999 from $16,930 in 1990. In 1990, the average wage in

nondurable goods manufacturing was $16,323 versus $17,545 in durable goods manufacturing. However, the growth in wages in nondurable goods manufacturing will surpass growth in durable goods manufacturing, and by 1999 the average wage in the nondurable goods sector will exceed the average in the durable goods sector.

In general, income growth will be weaker in the forthcoming decade than has been the experience of the last three decades. This suggests that improvements in the standard of living, at least measured in terms of worker income, will be harder to obtain and will require more significant advancements in productivity.■

URBAN AND RURAL ECONOMIES IN TENNESSEE

by Carlos Martins-Filho and Ayoub Yousefi

There is little if any agreement in either the diagnosis or the policy alternatives for overcoming chronic poverty in rural counties.

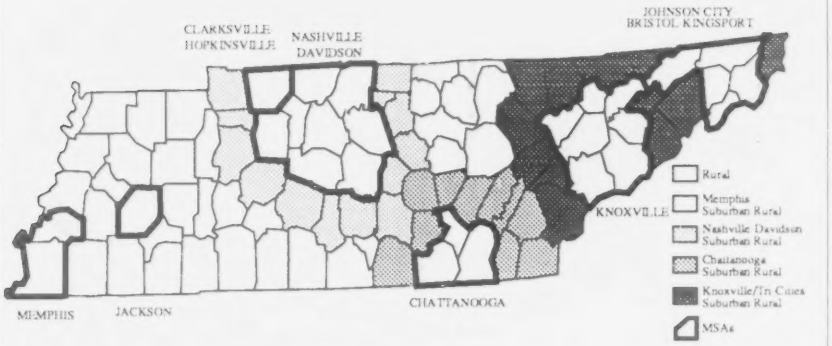
Differences between MSA and non-MSA counties have been carefully studied during recent years, and explanations for broad disparities in socioeconomic indicators have been developed. Nonetheless, there is little if any agreement in either the diagnosis or the policy alternatives for overcoming chronic poverty in rural counties. Investigating the characteristics of Tennessee's rural and urban areas can best be accomplished by dividing the state's 95 counties into three main areas: 1) urban or Metropolitan Statistical Areas (MSA) counties; 2) suburban rural counties–those adjacent to MSA counties; and 3) rural counties–those which are not contiguous with an urban area.

Of the three areas of focus used in this article, the first (denoted MSA) includes all MSA counties with the exception of non-Tennessee portions of border MSAs (i.e., only Tennessee counties are included). In addition, the Clarksville-Hopkinsville and Nashville MSAs are merged. The second area, the suburban rural counties, is formed by counties adjacent to the five largest MSAs (Memphis, Nashville, Chattanooga, Knoxville, and Tri-cities). The remaining counties comprise the rural component of the analysis. These three subdivisions of the state are illustrated in Figure 1, and counties that comprise each subdivision are detailed in Table 1. Distinctions between these three areas are based solely on geographic characteristics, rather than economic activity or social indicators.

Demographic Aspects

Tennessee's population is predominantly urban. Figure 2 shows that in 1980, 66.39 percent

FIGURE 1
MSAs, Suburban Rural, and Rural Areas



of the state's population lived in urban areas, increasing to 67.08 percent in 1988. This increase, accompanied by declines in the rural share of state population, suggests that the main economic activities in the state have evolved from rural activities like agriculture. However, manufacturing and services activities also flourish in many rural places.

Table 2 provides population levels and population growth rates from 1980 to 1988 for the three areas of focus. The state's growth rate of 6.6 percent between 1980 and 1988 was well below the national rate of 8.5. Unlike suburban rural areas which have been growing at relatively uniform rates, the MSAs have been growing at substantially different rates. The Nashville MSA, for example, has experienced the highest rate of growth in the state (14.47 percent), while the Chattanooga MSA has the lowest rate (1.79). The Nashville MSA is the only area growing faster than the state. Because of Nashville's size relative to the state, Nashville's growth provides an important contribution to overall state growth.

The Nashville area experienced an influx of over 78,000 people between 1980 and 1988, five times more than Knoxville, the second largest recipient of migrants. Migration is the main deter-

FIGURE 2
Percentage of State Population
by Region, 1980 and 1988

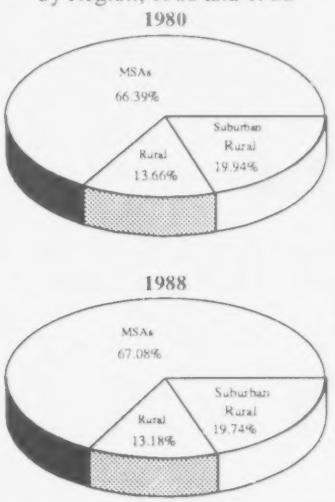


TABLE 1
MSAs, Suburban Rural, and Rural Areas with Constituent Counties

MSAs	Suburban Rural	Rural
KNOXVILLE	KNOXVILLE & TRI-CITIES	Benton
Anderson	Campbell	Carroll
Blount	Claiborne	Chester
Grainger	Cocke	Clay
Jefferson	Greene	Crockett
Knox	Hamblen	Cumberland
Sevier	Hancock	Decatur
Union	Johnson	Dyer
MEMPHIS	Loudon	Fentress
Shelby	Monroe	Gibson
Tipton	Morgan	Giles
JACKSON	Roane	Hardeman
Madison	Scott	Hardin
CHATTANOOGA	CHATTANOOGA	Henderson
Hamilton	Bledsoe	Henry
Marion	Bradley	Jackson
Sequatchie	Franklin	Lake
TRI-CITIES	Grundy	Lawrence
Carter	McMinn	Lewis
Hawkins	Meigs	Lincoln
Sullivan	Polk	McNairy
Washington	Rhea	Moore
Unicoi	Van Buren	Obion
NASHVILLE	Warren	Overton
Cheatham	NASHVILLE-DAVIDSON	Perry
Davidson	Bedford	Pickett
Dickson	Cannon	Putnam
Montgomery	Coffee	Wayne
Robertson	Dekalb	Weakley
Rutherford	Hickman	White
Sumner	Houston	
Williamson	Humphreys	
Wilson	Macon	
	Marshall	
	Maury	
	Smith	
	Stewart	
	Trousdale	
	MEMPHIS	
	Fayette	
	Lauderdale	
	Haywood	

Source: U.S. Department of Commerce, Bureau of the Census, Census of Population, 1980; and U.S. Office of Management and Budget, June 30, 1985.
Note: MSAs bordering neighboring states do not include out-of-state counties. The in-state portion of the Clarksville-Hopkinsville MSA, Montgomery County, is included here as part of the Nashville

TABLE 2
Population and Rate of Growth, By Main Areas, 1980 and 1988

MSAs	Population 1980	Population 1988	Rate of Growth (Percent)
Chattanooga	320,664	326,400	1.79
Knoxville	565,900	599,600	5.95
Jackson	74,546	78,200	4.90
Memphis	810,043	857,900	5.90
Nashville	933,847	1,069,000	14.47
Tri-Cities	343,041	352,500	2.76
TOTAL	3,048,041	3,283,600	7.73
Suburban Rural			
Chattanooga	247,322	263,100	6.38
Knoxville/Tri-Cities	354,205	370,200	4.52
Memphis	70,178	72,600	3.45
Nashville, Davidson	244,259	260,200	6.53
TOTAL	915,964	966,100	5.47
Rural			
TOTAL	627,308	645,300	2.87
Tennessee	4,591,313	4,895,000	6.61

minant of the high population growth rate in the Nashville MSA, accounting for 58 percent of total population growth in that region.

Net immigration for rural counties was positive and higher than the number for any other area except for Nashville, Knoxville, and the Nashville suburban area. Further, net migration in the rural counties was responsible for 53 percent of total growth, indicating that migration had a greater responsibility for growth than did the difference between births and deaths. Nonetheless, rural counties had a very low rate of growth, exceeding only the growth rate for the Chattanooga and Tri-Cities MSAs, indicating that there is no widespread movement of population from rural to MSA or suburban areas.

Per Capita Income

Per capita income is a major indicator of economic development, and clearly, the per capita income in MSA counties is on average higher than in suburban and rural counties. The Memphis, Nashville, and Chattanooga MSAs have particularly high per capita income compared to other areas in the state. In addition, suburban counties for Chattanooga and Nashville MSAs have higher per capita incomes than other suburban areas. However, rural counties do not necessarily have low per capita income compared with suburban rural counties. In fact, if counties such as Pickett, Lewis, and Fentress, which have significantly low per capita income, were eliminated from the rural group, its average per capita income would be com-

parable to the highest per capita income suburban rural areas–namely, Chattanooga and Nashville.

It is difficult to identify socioeconomic factors responsible for the observed disparities in per capita income, but one likely explanation is that the jobs available in counties differ widely. Similarly, it is difficult to establish any relationship between population movements and levels of per capita income. For example, the Memphis and Nashville MSAs have the highest per capita incomes of all MSAs; however, the former is experiencing negative net migration, while the latter is facing the strongest positive net migration in the state.

Employment Distribution

There are important differences in the distribution of the employed population across sectors of the economy for different regions of the state. The general classification of economic sectors provided by the Bureau of Economic Analysis is used in calculating the percentage of the labor force employed in the farm, manufacturing, and service sectors. Results are depicted in Figure 3 for 1979 and 1988, for MSA counties, the suburban rural counties, rural counties and all of Tennessee.

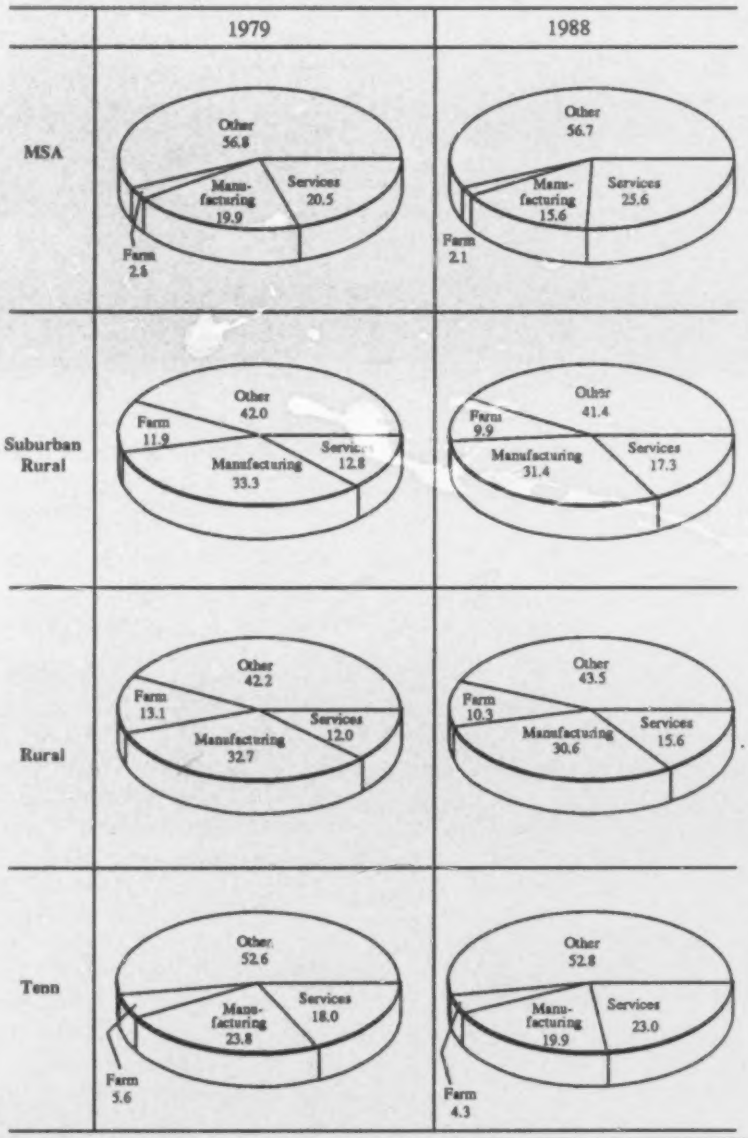
In general, the MSA counties are much less manufacturing oriented and more services oriented than other subdivisions of the state. In fact, for 1988, MSA manufacturing orientation is only half of that for the suburban rural and rural counties. This has important implications for the cyclical sensitivity of MSA versus non-MSA economies, since the manufacturing sector is typically more disadvantaged during economic downturns. Manufacturing and farming declined as a percent of employment for both MSA and non-MSA areas between 1979 and 1988. On the other hand, the role of services in providing new job opportunities expanded in all areas for this period. Note also that for both years, 1979 and 1988, services had a higher share of employment in MSAs than in other areas.

Between 1979 and 1988, the number of counties doubled in which farming accounted for less than 5 percent of total employment. Another important change over the years considered is that the number of counties that could be considered predominantly agricultural (where employment shares exceeded 20 percent) was significantly reduced by 1988. In 1979, there were six counties in which the agricultural sector accounted for more than 20 percent of total employment. Hancock County, which is located in the Knoxville-Tri-Cities suburban area, had farm employment in excess of 30 percent of all employment. Obviously, there has been a significant relative decline in farm employment to very low levels–frequently to less than 5 percent of overall employment.

In 1988, farming accounted for less than 5 percent of total employment in 11 MSA counties, seven suburban counties, and one rural county (Putnam). These counties are concentrated in the middle and eastern areas of the state (see Figure 4). Among the counties in which farming was responsible for more than 20 percent of total employment, two were located in the Knoxville MSA, five in suburban areas, and four in rural areas.

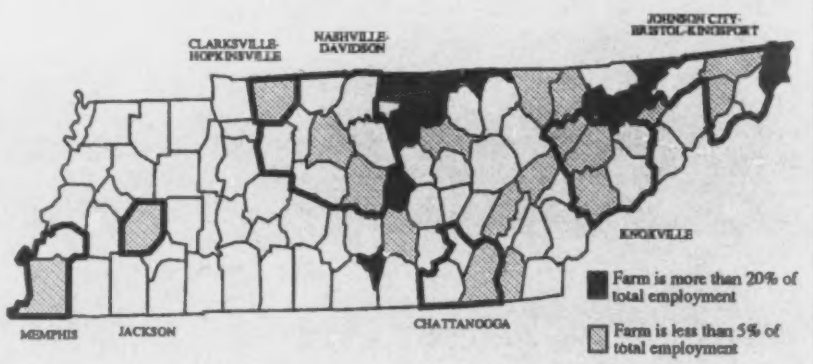
There appears to be no apparent relationship between the rate of unemployment and the predominance of farming employment in the broad areas analyzed here. However, there is a relationship between a region's per capita income and its share of farm employ-

FIGURE 3
Distribution of Employed Population Among Different Economic Sectors, 1979 and 1988



Source: Regional Economic Information System, Bureau of Economic Analysis.

FIGURE 4
Geographical Distribution of Farm Employment, 1988



ment. Not surprisingly, predominantly agricultural counties have low per capita income; in fact, they are substantially below the state average. This is true, for example, in Hancock, Jackson, and Union counties.

There was an increasing concentration of manufacturing employment in 1988 relative to 1979. On the one hand, those counties with less than 10 percent of their employment in manufacturing in 1979 now have at least 10 percent manufacturing sector employment. On the other hand, fewer counties have high manufacturing employment shares. Expansions in service sector employment with little or no growth in manufacturing employment is the main reason. Indeed, the service sector showed a significant increase in the share of employment in all geographic areas.

Five conclusions can be drawn from the data. First, concurrent with the general trend toward a declining share of manufacturing employment in the state has been the increasing share of services in total employment. At the same time, the role of farming as a provider of employment has been slightly declining over the last decade in all of the areas. Second, counties where farm employment plays a significant role tend to be concentrated in upper-middle Tennessee and the northeast corner of the state.

A third conclusion is that the manufacturing sector represents a larger share of economic activity in rural counties and suburban rural counties relative to MSA counties. Hence, Tennessee's rural areas are not heavily oriented towards agriculture, and the more dominant manufacturing sector can be expected to cause more pronounced swings in the economy as a result of business cycle patterns. Fourth, counties in which nonfarm employment is predominant are heavily concentrated in MSAs. And finally, although no relationship was found between a region's farming employment and its unemployment rate, there is a negative relationship between per capita income

and the share of farm employment for the areas considered here.

State Sales and Use Tax Collections

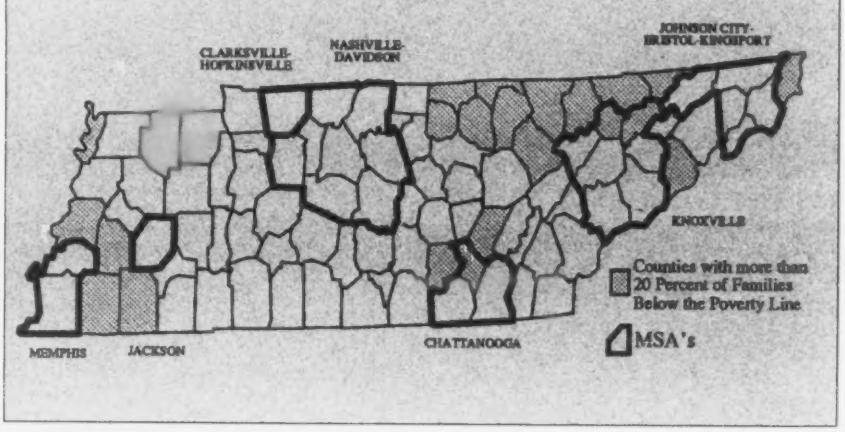
Sales and use tax collections are a direct reflection of the volume of retail sales activity in an area. In 1988, 6.2 percent of state tax collections were generated from out-of-state sources (such as mail order sales). These will be excluded from further consideration. MSA counties generated 73.2 percent of total collections--12.6 percent from suburban rural counties, and 8.0 percent from rural counties. Among the MSAs, Memphis and Nashville contributed 18.8 and 25.3 percent of total state sales and use tax collections, respectively, in fiscal year 1988. (Shelby County and Davidson County had 19.5 percent and 13.2 percent of total state personal income in 1987.)

Banking Activity

The number of banking offices in a county is not only an important measure of the availability of financial services to local businessmen, but can also be a good indicator of the county economy's strength, since higher levels of economic activity are followed by an increasing demand for banking services. Of course, technology in the banking industry, which allows easy transfer and manipulation of funds, may permit deposits to be made in counties other than where the economic activity takes place. Hence, a farmer in Hancock County can choose to make deposits in neighboring Washington County (or in many other places across the U.S.). This practice represents a caveat to the use of deposits or the number of banking offices as an indicator of volume of economic activity. Nonetheless, Figure 5 illustrates that there was a substantial concentration of banking offices in MSA counties. In fact, among the 15 counties that have more than 20 banking offices, only Gibson and Bradley are not in MSAs. Again, no clear difference was established between suburban and rural areas. Twenty-eight counties were found to have five or fewer banking offices. Only four of them were located in an MSA–Grainger, Union, Unicoi, and Sequatchie. Further, no difference in concentration was established between suburban and rural areas. It is interesting to note that among the MSAs, Nashville has the highest concentration of banking offices as well as the highest number of banks in the state. Also, there are similarities between the pattern of banking concentration across the three broad areas considered here and the distribution of per capita income and per capita tax collections. That is, banking activities are concentrated in places with high per capita income and high per capita tax collections.

Per capita tax collections can be illuminating because they permit the exclusion of collection differences arising solely from population differences. Per capita sales and use tax collections in each MSA are higher than in their respective suburban areas. In addition, per capita tax collections in rural counties are smaller than in any other area except for the Memphis suburban area. A sharp contrast is evident between the three broad regions: the volume of per capita retail trade is much lower in rural and suburban areas than in urban areas. Decreasing per capita tax collections as we move from MSAs to suburban counties coincides with the pattern observed for per capita income. However, the concentration of collections in urban areas, which is a reflection of larger cities serv-

FIGURE 5
Geographical Distribution of Counties with More than 20 Percent of Families Below the Poverty Line in 1979



ing as trade centers, also contributes to overall collection patterns.

Social Indicators

Families Below the Poverty Line

The definition of poverty status varies according to family size, age and place of residence. The most recent data available for the state and substate regions are for 1979. However, poverty thresholds are updated annually to reflect changes in the annual average Consumer Price Index (CPI).

All counties that had more than 20 percent of their families below the poverty line were identified in the three areas of study, and their geographic distribution is shown in Figure 5. There are substantial differences in poverty across county groupings; however, suburban areas do not appear to be substantially different from rural counties. Among the 22 counties where more than 20 percent of families are below the poverty line, only three were in MSA areas: Grainger and Union in the Knoxville MSA, and Sequatchie in the Chattanooga MSA. Of the remaining 19 counties, 12 were located in suburban areas, predominantly in Memphis and Knoxville-Tri Cities, and only seven were located in rural areas. Not surprisingly, all counties classified as predominantly agricultural in the discussion above have more than 20 percent of their families below the poverty line. Hancock County, which has the highest share of agricultural employment, has the largest percentage of families below the poverty line (39.5 percent). Another general tendency confirmed is that the Nashville MSA and suburban areas differentiate themselves as the most developed part of the state. None of their counties surpasses the 20 percent level threshold, and the counties with the lowest number of families with incomes below the poverty level, Williamson and Trousdale, are located in these areas.

Financing Public Education

Numerous educational indicators can be chosen for study, one of which is per

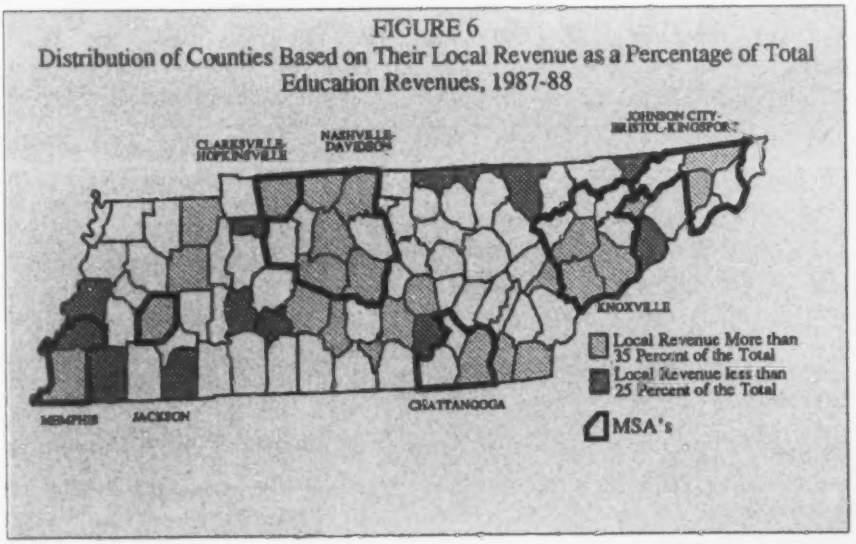
pupil spending for education. These data illustrate what local economies are contributing to the provision of educational services.

Public education in the state is financed through state, local, and federal funds. Different factors determine the funding provided by each. State support which comes from the general fund is distributed according to the foundation formula based on average daily attendance (ADA), and level of teachers' experience. Conversely, local support depends upon local economic strength, local residents' willingness to pay taxes, and efforts for better educational opportunities. Finally, federal funds follow nationwide considerations and become available either separately or in conjunction with the state funds.

In the school year 1987-1988, state funds were the largest component of total county school system revenues (48.6 percent) but provided widely different shares of revenue at the district level. The share varied from 63.5 percent in Lewis County to 33.7 percent in Davidson County. Local revenue, derived primarily from property and sales taxes, is the second most important component of the total county schools system, contributing 41.5 percent of revenues. In 1987-1988, the local revenue share in total school revenues ranged from 54.3 percent in Davidson County to 8.7 percent in Hancock County. Also for the same period, the share of federal funds, which contributed 9.9 percent of total financing for all counties, varied from 28.8 percent in Hancock County to 4.5 in Williamson County.

Counties in which local revenue accounts for more than 35 percent of the total are located primarily in MSAs or in suburban areas, with the exception of Carroll, Henry, and Moore counties. On the other hand, counties in which local revenue accounts for less than 25 percent are all located in nonMSAs, with the exception of Tipton County. (See Figure 6.) Finally, it should be noted that federal funds, contributing the lowest share of

FIGURE 6
Distribution of Counties Based on Their Local Revenue as a Percentage of Total Education Revenues, 1987-88



total revenue, play a complementary role in supporting local education. However, in 1987-1988, the cross-county distribution of federal funds demonstrated a range narrower than that for the other sources described above. This likely is due to the fact that distribution of federal funds is based largely upon nationwide and statewide considerations rather than on the characteristics of specific counties and districts.

Conclusions

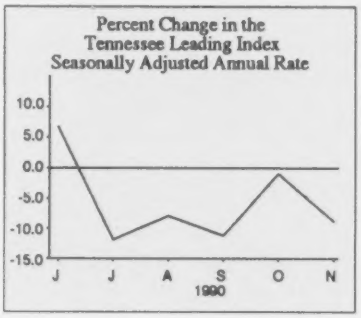
Some general conclusions can be reached from the data. First, though MSAs are widely different from suburban and rural areas, many of the indicators do not signal a substantial difference between suburban and rural areas. Second, since the number of farm counties in Tennessee is very small, comparisons between predominantly farm and nonfarm counties should, for policy purposes, be made cautiously. A third and related conclusion is that many counties in rural areas have high levels of manufacturing employment, yet their socioeconomic indicators often suggest low levels of development. This is probably a reflection of the type of manufacturing sector jobs available in rural areas. ■

TENNESSEE ECONOMIC OVERVIEW

(November Index as of January 17, 1991)

November's indicators provide additional evidence that Tennessee has slid into a recession, and reveal little reason to expect an imminent rebound. The Tennessee index of coincident indicators fell sharply in November at a seasonally adjusted annual rate (SAAR) of 18 percent, and is down 3 percent from November, 1989. It was the fourth consecutive monthly decline in the index, which now stands at 122.5, its lowest level since February, 1988. All three seasonally adjusted components of the index contributed to the November decline. The national economy continues to weaken, as is evident by the fall in U.S. coincident index. The U.S. coincident index has now declined five straight months. The two other components, Tennessee commercial and industrial electrical consumption and the Memphis help-wanted index, both declined significantly in November.

After a relatively small drop in October, the Tennessee index of leading economic indicators fell in November at a seasonally adjusted annual rate of nearly 9 percent. The index has declined for five consecutive months. These developments point to continued weakness in the Tennessee economy during the next several months. Three of the five seasonally adjusted components of the leading index registered decreases in November. The U. S. leading index fell for the fifth straight month, while inflation-adjusted taxable mortgages and total Tennessee construction starts also declined. On the positive side, inflation-adjusted taxable sales rose for the second

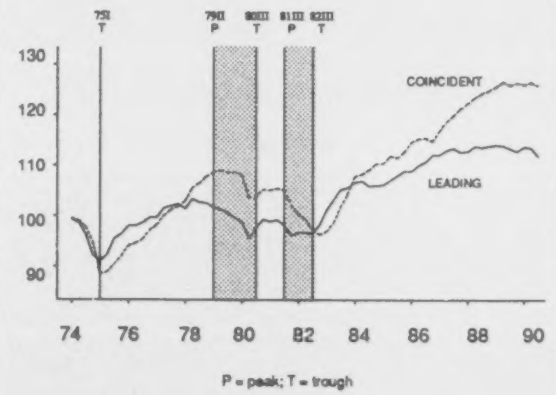


month in a row. Nevertheless, taxable sales are 2 percent lower in November, 1990 than they were in November, 1989. Finally, an encouraging sign at first glance is the drop in initial claims for Tennessee unemployment insurance. This statistic, which rose throughout most of 1990, fell for the first time since June. However, it should be remembered that this follows a very substantial leap in new claims in October; the level of new claims remains extremely high, over 40 percent above the November, 1989 level.

Tennessee labor markets are displaying effects of the downturn. The November unemployment rate for Tennessee stood at 5.7 percent, seasonally adjusted, up from 5.5 percent in October, and up from the June rate of 4.6 percent. Seasonally-adjusted nonagricultural employment and manufacturing employment both fell in November at rates of nearly 3 percent and 8.5 percent (SAAR), respectively.

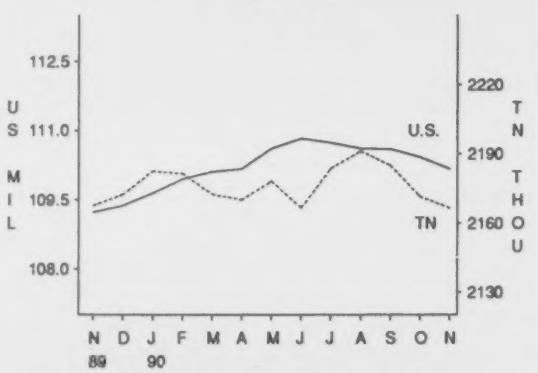
The outlook for Tennessee hinges upon how the national economy performs in the next few months. This in turn is largely dependent upon the highly uncertain and volatile Gulf situation. The U.N. deadline for Iraq to pull out of Kuwait is now passed, and war has begun. A successful war of brief duration would most likely result in lower oil prices, as well as renewed business and consumer confidence, all of which would be beneficial to the economy. The effects of a long and extensive war are, of course, difficult to predict. While increased military expenditures would have a stimulative effect on the economy, skyrocketing oil prices and pessimism on the part of consumers and businesses would place further strain on the already-weakened U.S. economy.

FIGURE 1
Coincident and Leading Indexes



P = peak; T = trough

FIGURE 2
Total Nonagricultural Employment
Seasonally Adjusted



Note: Calculated from data provided by the Tennessee Department of Employment Security.

Center for Business and Economic Research, College of Business Administration, The University of Tennessee, Knoxville. For further information, call CBER (615) 974-5441.
Data reported herein are seasonally adjusted, and therefore may not be directly comparable to data reported elsewhere.

Tennessee Economic Indicators
(Seasonally Adjusted)

	10/89	11/89	12/89	1/90	2/90	3/90	4/90	5/90	6/90	7/90	8/90	9/90	10/90	1987	1988	1989
US Personal Income (BIL 82 $) (1)	3541.5	3553.3	3560.3	3549.1	3555.4	3564.5	3566.6	3574.2	3569.8	3573.8	3557.3	3546.7	3529.7	3311.2	3439.2	3534.9
% Chg Prev Month SAAR	2.24	4.07	2.41	-3.72	2.16	3.13	0.70	2.57	-1.47	1.36	-5.41	-3.50	-5.61	3.02	3.87	2.78
% Chg Same Month Last Yr.	1.44	2.59	2.25	1.09	0.74	0.56	0.88	1.56	1.32	1.16	0.68	0.33	-0.33	3.02	3.87	2.78
US CPI,All Urban Consumers (1982-84=100)	125.4	125.8	126.3	127.7	128.3	128.9	129.1	129.3	130.0	130.5	131.5	132.5	133.3	113.7	118.3	124.0
% Chg Prev Month SAAR	5.92	3.90	4.88	14.14	5.79	5.76	1.88	1.87	6.69	4.71	9.59	9.52	7.49	3.67	4.06	4.80
% Chg Same Month Last Yr	4.50	4.57	4.64	5.19	5.25	5.22	4.70	4.44	4.75	4.82	5.62	6.17	6.30	3.67	4.06	4.80
TN Nonag Employment (THOU) (2)	2164.8	2174.4	2167.0	2177.3	2180.4	2173.5	2179.3	2173.7	2179.5	2185.9	2187.8	2176.2	2167.9	2011.8	2091.8	2153.3
% Chg Prev Month SAAR	-1.84	5.42	-4.00	5.84	1.72	-3.72	3.29	-3.06	3.27	3.59	1.02	-6.16	-4.50	4.25	3.98	2.94
% Chg Same Month Last Yr	2.74	1.97	2.15	3.07	2.88	2.20	1.71	1.28	0.50	0.53	0.61	0.37	0.14	4.25	3.98	2.94
US Nonag Employment (MIL)	109.0	109.2	109.4	109.7	110.0	110.1	110.2	110.6	110.8	110.7	110.6	110.6	110.5	102.2	105.5	108.4
% Chg Prev Month SAAR	1.24	2.96	1.53	3.01	3.38	1.80	0.60	4.90	2.32	-0.96	-1.37	-0.56	-0.74	2.69	3.27	2.73
% Chg Same Month Last Yr	2.37	2.32	2.16	2.07	2.15	2.14	2.03	2.30	2.27	2.07	1.83	1.56	1.39	2.69	3.27	2.73
TN Unemployment Rate (%) (2)	5.0	5.2	5.2	5.3	5.2	5.1	5.0	5.1	4.7	5.0	5.0	5.2	5.5	6.6	5.8	5.1
US Unemployment Rate (%)	5.3	5.3	5.3	5.3	5.3	5.2	5.4	5.3	5.2	5.5	5.6	5.7	5.7	6.2	5.5	5.3
Bank Prime Interest Rate (%)	10.5	10.5	10.5	10.1	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	8.2	9.3	10.9
US Coincident Composite Index (1982=100)	133.1	133.4	133.8	132.7	133.8	134.2	133.7	134.4	134.9	134.7	134.4	133.3	132.0	123.6	130.0	133.5
% Chg Prev Month SAAR	-5.25	2.74	3.66	-9.43	10.41	3.65	-4.38	6.47	4.56	-1.76	-2.64	-9.39	-11.10	3.85	5.19	2.71
% Chg Same Month Last Yr	0.76	1.29	0.98	-0.45	0.38	0.60	-0.30	0.75	1.12	1.28	0.30	-0.30	-0.83	3.85	5.19	2.71
US Leading Composite Index (1982=100)	144.4	144.6	145.3	145.4	144.1	145.4	145.2	146.0	146.2	146.1	144.4	143.3	141.6	140.0	142.7	144.9
% Chg Prev Month SAAR	-4.06	1.67	5.97	0.83	-10.22	11.38	-1.64	6.82	1.66	-0.82	-13.10	-8.77	-13.34	5.97	1.90	1.54
% Chg Same Month Last Yr	0.35	0.35	0.21	-0.34	-1.03	0.41	-0.34	1.11	1.39	1.39	-0.35	-1.10	-1.94	5.97	1.90	1.54
TN Coincident Composite Index (1/74=100)	126.4	126.2	126.5	127.0	124.8	126.1	126.6	126.1	126.7	127.0	125.5	125.1	124.6	119.2	123.7	126.1
% Chg Prev Month SAAR	-0.50	-1.42	2.53	4.86	-18.61	12.96	4.84	-4.15	5.07	3.02	-13.02	-3.93	-4.60	3.60	3.81	1.92
% Chg Same Month Last Yr	0.38	1.72	1.44	1.06	-0.32	0.24	-0.41	-0.09	0.31	1.36	-0.35	-1.05	-1.39	3.60	3.81	1.92
TN Leading Composite Index (1/74=100)	112.7	113.3	112.4	113.9	113.9	112.9	113.0	113.2	113.8	112.6	111.9	110.8	110.7	112.7	113.4	113.4
% Chg Prev Month SAAR	-9.70	6.88	-9.36	18.33	-0.82	-9.23	0.76	1.85	6.80	-11.90	-7.84	-10.75	-0.71	2.12	0.62	0.02
% Chg Same Month Last Yr	-0.72	-0.47	-1.46	0.03	-0.23	-0.67	-1.26	-0.34	0.38	0.04	-1.60	-2.48	-1.70	2.12	0.62	0.02
TN Comm & Ind Elect Consumption (MIL KWH) (3)	2326	2399	2381	2486	2254	2307	2349	2370	2402	2469	2352	2475	2440	25124	26796	27784
% Chg Prev Month SAAR	-6.29	45.16	-8.65	67.50	-69.14	32.32	24.60	11.05	17.56	38.94	-44.06	84.23	-15.86	3.26	6.66	3.69
% Chg Same Month Last Yr	2.27	6.17	4.69	10.41	-0.58	0.61	2.06	2.84	2.34	8.23	2.53	5.86	4.91	3.26	6.66	3.69
Help Wanted Index,Memphis (1967=100) (4)	148	135	138	140	131	139	144	131	131	129	125	114	119	143	144	143
% Chg Prev Month SAAR	51.05	-66.82	30.18	18.85	-54.95	103.67	52.82	-67.87	0.00	-16.86	-31.48	-66.89	67.38	13.91	0.93	-0.87
% Chg Same Month Last Yr	-4.52	0.75	2.22	-4.11	-5.07	-2.11	-7.10	-10.88	-7.75	-7.19	-10.71	-20.28	-19.59	13.91	0.93	-0.87
TN Mfg Employment (THOU) (2)	524.2	525.9	524.4	526.1	524.9	522.9	524.7	522.3	520.4	523.6	521.5	517.6	517.1	497.5	511.8	523.7
% Chg Prev Month SAAR	-2.95	3.90	-3.33	4.03	-2.83	-4.33	4.18	-5.40	-4.19	7.51	-4.71	-8.60	-1.14	1.42	2.88	2.32
% Chg Same Month Last Yr	1.87	1.79	1.45	1.92	1.40	0.67	0.08	-0.15	-1.23	-0.85	-1.38	-1.51	-1.35	1.42	2.88	2.32
US Mfg Employment (MIL)	19.3	19.3	19.3	19.2	19.2	19.2	19.2	19.2	19.1	19.1	19.1	19.0	19.0	19.0	19.4	19.4
% Chg Prev Month SAAR	-2.21	-1.72	-1.36	-6.81	4.67	-1.67	-1.67	-1.43	-1.18	-1.06	-2.91	-4.13	-3.78	0.32	1.73	0.39
% Chg Same Month Last Yr	-0.46	-0.80	-1.00	-1.87	-1.33	-1.47	-1.53	-1.60	-1.57	-1.58	-1.78	-1.82	-1.96	0.32	1.73	0.39
TN Mfg Avg Weekly Hours (2)	40.6	39.8	39.2	39.2	38.6	38.6	38.2	39.0	39.1	39.7	39.4	39.3	39.4	41.6	41.6	40.8
% Chg Prev Month SAAR	-12.88	-20.80	-16.31	-0.55	-17.80	1.71	-12.39	29.42	2.93	18.46	-6.40	-4.69	2.68	0.79	0.05	-1.83
% Chg Same Month Last Yr	-0.89	-3.88	-6.02	-4.50	-5.86	-6.05	-8.44	-4.83	-5.35	-3.45	-4.11	-4.27	-2.95	0.79	0.05	-1.83
TN Taxable Sales (MIL $) (5)	3458	3498	3440	3636	3840	3633	3625	3530	3672	3646	3471	3422	3560	37583	39841	41407
% Chg Prev Month SAAR	-0.30	14.43	-18.15	94.67	92.55	-48.53	-2.62	-27.25	60.39	-8.31	-44.61	-15.58	60.80	6.26	6.01	3.93
% Chg Same Month Last Yr	4.97	3.50	1.00	7.48	14.13	3.14	6.56	2.28	4.81	5.21	-0.04	-1.08	2.94	6.26	6.01	3.93
TN Taxable Sales (MIL 82 $) (5)	2758	2780	2723	2847	2993	2819	2808	2730	2825	2794	2639	2583	2671	33040	33665	33388
% Chg Prev Month SAAR	-5.88	10.14	-21.95	70.55	82.02	-51.33	-4.42	-28.59	50.32	-12.44	-49.46	-22.92	49.59	2.49	1.89	-0.82
% Chg Same Month Last Yr	0.45	-1.02	-3.48	2.18	8.44	-1.98	2.16	-2.07	0.05	0.37	-5.36	-6.83	-3.16	2.49	1.89	-0.82
Initial Claims For TN UI (THOU) (2)	42.3	41.3	42.1	43.4	40.2	42.7	44.9	46.5	34.8	45.9	48.4	49.2	59.8	439.2	417.2	466.1
% Chg Prev Month SAAR	222.7	-24.9	24.4	44.8	-59.8	101.7	85.1	50.4	-96.9	2756.9	88.8	20.9	937.1	-14.2	-5.0	11.7
% Chg Same Month Last Yr	18.57	8.49	29.14	23.19	16.51	21.77	42.22	20.03	-14.81	9.10	10.44	28.18	41.27	-14.20	-5.01	11.72
Continued Weeks Claimed For TN UI (THOU) (2)	202.0	203.2	185.3	216.6	197.5	187.9	219.1	234.2	202.9	237.6	217.0	206.1	274.8	2061.5	2063.2	2172.4
% Chg Prev Month SAAR	550.8	7.3	-66.8	550.1	-67.0	-44.9	531.4	122.6	-82.1	565.7	-66.4	-46.2	3056.3	-10.5	0.1	5.3
% Chg Same Month Last Yr	18.66	4.35	18.93	24.83	18.35	9.34	33.73	28.28	16.74	30.82	11.35	19.27	36.04	-10.51	0.08	5.29
Total TN Construction Starts (6)	437.7	431.7	393.6	457.7	422.7	399.2	490.6	491.7	431.4	373.4	381.6	386.8	460.4	5330.5	5283.8	5341.7
% Chg Prev Month SAAR	-54.7	-15.2	-67.0	511.1	-61.5	-49.7	1086.1	2.8	-79.2	-82.3	29.7	17.6	709.0	1.2	-0.9	1.1
% Chg Same Month Last Yr	2.09	-12.01	-13.36	4.54	-10.15	2.30	-11.40	11.45	-4.47	-6.58	-18.23	-17.28	5.19	1.22	-0.88	1.10
Value Of TN Constrc Starts (MIL 82 $,NSA) (6)	291	275	304	255	228	283	268	306	379	234	352	282	341	4495	4240	4054
% Chg Prev Month SAAR	-99.8	-50.1	240.8	-88.2	-73.1	1204.0	-47.5	383.0	1240.2	-99.7	13650.3	-93.1	866.6	7.9	-5.7	-4.4
% Chg Same Month Last Yr	-26.08	-6.16	-2.56	-8.21	-0.98	0.41	-28.44	-22.45	-5.83	-20.81	-19.23	-42.56	16.94	7.86	-5.67	-4.40

	87/III	87/IV	88/I	88/II	88/III	88/IV	89/I	89/II	89/III	89/IV	90/I	90/II	90/III	1987	1988	1989
US GNP (BIL 82 $) (1)	3858.9	3920.7	3970.2	4005.8	4032.1	4059.3	4095.7	4112.2	4129.7	4133.2	4150.6	4155.1	4173.6	3845.3	4016.9	4117.7
% Chg Prev Qtr SAAR	4.10	6.56	5.15	3.64	2.65	2.73	3.64	1.62	1.71	0.34	1.69	0.43	1.79	3.43	4.46	2.51
% Chg Same Qtr Last Yr	3.95	5.01	5.00	4.86	4.49	3.54	3.16	2.66	2.42	1.82	1.34	1.04	1.06	3.43	4.46	2.51
TN Personal Income (MIL $) (1)	62903	65099	65891	67551	68754	70010	71334	72213	72950	73850	75420	76101	NA	62704	68052	72587
% Chg Prev Qtr SAAR	7.37	14.71	4.96	10.46	7.32	7.51	7.78	5.02	4.15	5.03	8.78	3.66	NA	8.39	8.53	6.66
% Chg Same Qtr Last Yr	7.83	9.86	7.98	9.31	9.30	7.54	8.26	6.90	6.10	5.48	5.73	5.38	NA	8.39	8.53	6.66
TN Personal Income (MIL 82 $) (1)	52288	53579	53921	54697	55047	55432	55773	55763	56029	56032	56284	56288	NA	52421	54774	55899
% Chg Prev Qtr SAAR	2.80	10.25	2.57	5.89	2.58	2.82	2.49	-0.07	1.92	0.02	1.81	0.03	NA	3.62	4.49	2.05
% Chg Same Qtr Last Yr	2.81	4.71	3.92	5.33	5.28	3.46	3.44	1.95	1.78	1.08	0.91	0.94	NA	3.62	4.49	2.05

1. Annual Rate.
2. Calculated from data provided by the Tennessee Department of Employment Security.
3. Source: Tennessee Valley Authority.
4. Source: The Conference Board.
5. Calculated from sales tax collections, provided by the Tennessee Department of Revenue.
6. Source: F.W. Dodge Division of McGraw-Hill Information Services Company.

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Survey

Survey OF BUSINESS

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The conference and the study tour that preceded the international Symposium on Environmental Policy in Annapolis, Maryland in mid-1990 presented opportunities for East Europeans to discuss their problems, concerns and fears about the sometimes disastrous effect of forty years of environmental neglect in their countries under Communist regimes. Some participants had recently left data-gathering functions in small university programs, or were placed in newly organized government agencies, and were being asked to write remediation legislation. The Symposium presented an opportunity for their concerns to be freely discussed with sympathetic Americans who were trying to be helpful and encouraging, but it also summarized the progression of environmental action in the United States. In this area, Americans have often led others in insisting that environmental improvement must take place, even though the costs have frequently seemed formidable.

That the progress came within a democracy and that many examples of how a democracy operates are included was also a theme of the symposium. The political process was used, multiple constituencies were heard, and compromises were often necessary. The visitors from Central and Eastern Europe appreciated and benefitted from this demonstration of democracy in action.

However, they learned that these problems do not yield to "quick fixes;" Americans have been steadily confronting their own pollution problems for over forty years and have still not achieved levels of environmental purity that allow us to relax our efforts. In addition, what we have done is flawed. Despite our successes, our efforts have sometimes resulted only in moving a given pollution problem from one place to another not in full remediation. Also, a given piece of legislation may conflict with other laws.

Specifically, the methods used and the approaches taken in this country cannot simply be transported elsewhere in the world and edicted; local parameters such as cultural traits, the state of the economy, and the motivational will of the people must be allowed to shape remediation efforts.

Our visits to East and Central Europe that began in 1984 have resulted in many friendships and have engendered a deep respect for the citizens of these countries. From these associations has come a confidence that–given opportunity, assistance, and freedom–these peoples can be counted upon to achieve much, to a better environment, to the flowering of democracy, and to a productive balance in the dualism of freedom and responsibility.

David A. Hake and L. Evans Roth

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Milton Russell is Senior Fellow, UT Energy, Environment and Resources Center; Professor of Economics; Senior Economist, Oak Ridge National Laboratory; and former Assistant Administrator for Policy Planning and Evaluation at the Environmental Protection Agency. He was chairman of the Project Steering Committee on the USIA-sponsored tour that led to the international Symposium on Environmental Policy and co-chaired the Symposium with E. William Colglazier, Director of the EERC.

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Daniel Schaffer is editor-in-chief of the policy journal, *Forum for Applied Research and Public Policy* and assistant director at The University of Tennessee's Energy, Environment, and Resources Center. He has written *Garden Cities For America* (Temple University Press) and edited *Two Centuries of American Planning* (The Johns Hopkins University Press). He is a former editor and writer for the Tennessee Valley Authority and served as a writer and producer for the CBS-TV "Sunrise Semester" series in New York City.

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A JOURNEY OF MUTUAL DISCOVERY

by Milton Russell

The extraordinary events of 1989-1990 dramatically revealed to citizens and outsiders alike the degree to which the environmental awakening had bypassed Eastern Europe.

Despite the Communists' neglect of environmental problems in Eastern and Central Europe, the darkest days of the Cold War were never so grim as to destroy contact between environmental scientists and officials on opposite sides of the Iron Curtain. The U.S.-Soviet environmental agreement survived even the onset of the war in Afghanistan, when virtually all other exchanges were abandoned. Governments recognized that frontiers were no barriers to pollution and that common interest dictated some cooperation. Yet, even in environmental affairs, the extraordinary events of 1989-1990 dramatically widened the opportunity for mutual activities. They also revealed to citizens and outsiders alike the degree to which the environmental awakening had bypassed Eastern Europe.

In hindsight, Earth Day 1970 seems to have marked the eventual demise of the "produce and pollute" mindset in the United States. The Stockholm Environment Conference of 1972 played a similar role in many Western European countries and Japan. Following these events, environmental protection institutions were created, legislation was passed, and public awareness was enhanced. The balance of influence shifted toward the idea that the future of humanity was intimately linked to the control of pollution and the protection of natural systems. Action followed–sometimes haltingly–to the point where, in many lands, rising populations and rising levels of output were accompanied by *improved* environmental conditions.

But not in Eastern Europe. After the political changes of 1989-1990, official statements, reports of an aroused citizenry and observations of foreign visitors united in the view that pollution had continued to grow, had reached dangerous levels, and that continuation of existing policies meant more of the same. In country after country, indigenous grassroots environmental groups both led and were empowered by governmental reform and independence from the Soviet Bloc. The Bloc's "produce and pollute" plans and quotas were principal targets for change. At the turn of the decade, with demand for environmental improvement in the air, the question was a practical one: "What is to be done next?"

While all of this was happening in Eastern Europe, changes in the United States were occurring that had important implications for the future. Briefly, limits were being recognized and priorities shifted. In the 1970s any reduction of pollution could confidently be seen to recede. Given the pressures for other uses of funds, voices crying for "more" environmental protection started to be joined by others calling for "balance," and still others shouting "enough." At the same time, global worries such as climate change, endangered species and protection of the oceans began to compete with domestic concerns for attention and resources. And opportunities for productive cooperation with Eastern Europe and developing countries offered highly attractive alternatives to greater domestic expenditure.

This was the context for a journey of mutual discovery through the eastern United States taken by 13 European environmental officials and their hosts last summer. Revelations occurred on both sides. U.S. participants were able to see their country and their environmental conditions through new eyes; problems–and successes–long taken for granted were seen in a more realistic light. Pride and rededications were the result. For the Europeans, the vision of what could be achieved left the most lasting impression. Goals at home were no easier to reach after the trip, but they did seem reachable–and therefore worthy of the effort, however long and arduous it might be.

A practical outcome was that both sides became more realistic about what help the U.S. might offer to the countries represented. The beginnings of an *effective* exchange were sketched–a change that could make a real difference in the air people breathe, the water they drink and the ecological heritage they leave their children. ■

EXPLORING ENVIRONMENTAL FRONTIERS: INTEGRATING SOLUTIONS EAST AND WEST

by Daniel Schaffer

The degradation of the environment has become a powerful symbol of political and economic mismanagement.

PROLOGUE

The world was a different place last July, when 13 East European environmental officials toured the United States, courtesy of the U.S. Information Agency. The end of the Cold War was still fresh in people's minds, the Soviet Union appeared headed toward rapid and dramatic reform, the United States was poised to tackle its long-festering domestic problems, Kuwait was a minor player in the world of diplomacy, and future progress in Eastern and Central Europe seemed limitless. For some, the end of history was at hand.

Within a month after the environmental officials had left for home, Iraq invaded Kuwait and the world's attention turned from events in Eastern Europe to events in the Middle East. Within *three* months of their visit, ethnic conflict and regional protest in the Soviet Union showed that the road to reform there would be difficult to traverse–that the journey to achieve democracy and a market economy would be impeded by unexpected twists, roadblocks, and gaping holes in the roadbed that would be difficult to bridge and perhaps impossible to repair.

Within six months of the environmental officials' journey, President Bush's decision to dispatch 500,000 troops to the Persian Gulf placed America's domestic agenda on hold and left the problems of the city, education, and health care lost within the deep shadow cast by military conflict.

And within nine months of the journey, reports from Eastern and Central Europe revealed that the

Ed. Note: This article by Daniel Schaffer, assistant director of the Energy, Environment and Resources Center at UT, appears in a monograph of the same title published in five languages by CBER, the East European Center, and the EERC. The monograph is available from CBER (615) 974-5441.

afterglow caused by the collapse of the Berlin Wall and the fall of Communism was rapidly fading. Nineteenth-century ethnic conflict, not twenty-first century technology, seemed the driving force behind change in the region, particularly in Yugoslavia, Hungary, Czechoslovakia, Bulgaria, and Romania. Even East Germans, now reunited with their Western brethren, experienced unexpected economic difficulties caused by high levels of unemployment, a lack of capital investment, an inadequate infrastructure, and an antiquated technological base.

In short, the euphoria caused by the revolutions of 1989 were replaced in 1990 by real-world concerns for coping with dramatic change that seemed both unending and pervasive.

What are we to make of this dramatic turn of events? How do we deal with a world that is subject to such rapid reversals in its attitudes toward the future?

The answer may lie in the value of exchange–in the sharing of ideas and values in an international forum such as the one that took place at Annapolis last July. That forum was remarkable not for its blind optimism, but for its sensible realism. What strikes me, as one who observed and recorded the event then, is the clear-eyed forecasts of the Europeans who participated in the tour–and the experienced voice of American public officials and environmentalists who spoke of their own long journeys and difficult but often successful forays into the policy arena. To a person, all agreed that recovery and reform would not be easy, that the happiness caused by the overthrow of the old regimes would be insufficient to sustain the dramatic economic and social changes about to take place, that the people would soon grow impatient with the pace of change, and that political harmony would soon fall victim to ancient animosities and deep divisions in ideologies and values.

The participants' response to this "inevitable" course of events was not pessimism, but a diligent commitment to stay the difficult course of reform.

That response makes the dialogue of last July as compelling today as it was then. The conversation, which conveyed a combined sense of hope and realism, provided a solid foundation for coping with the rapid course of events that was about to unfold. The rebuilding of Eastern and Central Europe requires not only capital and technology; it also requires dialogue and exchange–a sharing of ideas, hopes, knowledge, and beliefs that will build a strong but sensible mindset to navigate the challenging road ahead.

If last year's events are any guide, no one can predict what next year will bring. One thing, however, is certain: there will be a continuing need for dialogue, not only to learn from each other's experience, but also to help cope with a world that is resilient in its ways, yet unpredictable in its behavior–that is a constant source of worry and a remarkable source of joy and wonder.

The revolutionary changes in Eastern and Central Europe during the past year have been sparked primarily by decades of political oppression and economic stagnation. One aspect of the region's decline has been the degradation of the environment, which itself has become a powerful symbol of political and economic mismanagement. In this new era of freedom, Eastern and Central Europe's pervasive industrial air pollution, inadequately treated wastes, polluted rivers, and sickly forests collectively convey the Communist regimes' insensitivity toward their own people and resources.

During the past year, the people of Eastern and Central Europe have experienced a remarkable series of historic events, equal in their impact to the historic changes that took place in 1919 and 1945. Communism's political and economic framework is being largely dismantled, if not as quickly as the Berlin Wall, then certainly at a rate of political speed that has defied all expectations. For many nations, a blueprint for political and economic reconstruction has been drawn and, in some cases, the rebuilding has begun.

Two additional measures have accompanied these revolutionary political and economic changes: for the first time since the beginning of World War II in the late 1930s, Eastern and Central Europeans can travel freely to the West

and, for the first time in more than 50 years, they can begin to seriously assess and address the state of their environment.

In July 1990, the new openness in Eastern and Central Europe brought 13 environmental officials from eight nations to the United States to examine environmental policies and programs in America. The tour was sponsored by the U.S. Information Agency Office of Citizen Exchanges and organized and led by The University of Tennessee's East European Center, under the direction of professors David A. Hake and L. Evans Roth.

The Participants

The participants in the Eastern and Central European environmental tour reflected both the emerging pluralism and sense of purpose and dedication that now shapes environmental affairs within this region–a sharp turnaround from the indifferent "party line" that dominated official policy statements and actions in the past.

Sixteen days of travel and discussion provided these thirteen European officials with a sense of how environmental policy is formulated and implemented in an open society dedicated to democratic participation, private property rights, and ecological progress.

The Tour

The tour began in Knoxville, Tennessee, where the officials conversed with researchers and officials from The University of Tennessee, the state government of Tennessee, Oak Ridge National Laboratory, and the Tennessee Valley Authority. They also heard about environmental grassroots activism in Appalachia from representatives of Tennessee's Save Our Cumberland Mountains and visited the Great Smoky Mountains National Park, where they learned of the Southern Appalachian Biosphere program that is tied to UNESCO's global Man and the Biosphere program.

From Knoxville, the group, accompanied by Drs. Hake and Roth, traveled to Cleveland, Ohio, to hear about the environmental success stories of Lake Erie and the Cuyahoga River--once deeply troubled environments brought back to life through concerted public and private

Countries and representatives participating in the environmental tour and the international Symposium on Environmental Policy included the following:

Bulgaria: Ivan Todorov Raev, head of the Department of Ecology and Environmental Protection at the Forest Research Institute of the Academy of Sciences; and Delcho Georgiev Vitchev, a leader in the citizens' environmental group, Ecoglasnost.

Czechoslovakia: Eva Kruzikova, head of the Department of Foreign Relations; and Svatomir Mlcoch, chief of public relations in the Ministry of Environment.

German Democratic Republic (East Germany): Uwe Schlenker, a scientist in the Department of Geological Sciences in the Mining Academy in Freiberg; and Willi Rolf Weiher, the director of the Bitterfeld Office of Environmental Protection.

Hungary: Angela Lely, a founding member of the Green Party and participant in Action Group Against Pollution.

Poland: Michal Zaremba-Czereyski, the head of the Bilateral Cooperation Division in the Department of International Cooperation in the Ministry of Environment; and Kazimierz Liszka, the head specialist of the state Environmental Inspection Center in Krakow.

Yugoslavia: Fedor Cerne, a former advisor to the Slovenian Minister who now works for the Slovenian Ministry of Environment and Physical Planning; and Vesna Vladikovic, the Counsellor for Information Systems, Environmental Division in the Federal Secretariat for Development.

The tour did not include representatives from Romania or Albania. It did include, however, two citizens from Western Europe: Wolfram Tertschnig from **Austria**, who heads the Department of Environmental Technologies and Environmental Research Policies in the Ministry for Environment, Youth and Family; and Hellmut Koenigshaus from the **Federal Republic of Germany** (West Germany), who is West Berlin's Division Chief of Toxic Waste Management and a senator for environmental affairs.

efforts that have reversed decades of neglect and abuse. They also heard from government officials and citizen groups about current environmental issues and programs for all of the Great Lakes region, including the need for continual vigilance once environmental improvements have been achieved.

From Cleveland, the group traveled to Pittsburgh, Pennsylvania, to be briefed about the successful transformation of Pittsburgh from a city once dominated by heavy industry and damaging pollution to one now propelled by service industries, scientific research, high technology, and a growing national reputation for environmental quality.

The last leg of the tour brought the environmental officials to Washington, D.C. There, they met with U.S. Senator Albert Gore, Jr., Tennessee; Michael R. Deland, Chairman of the Council on Environmental Quality; Robert Fairweather, Environmental Branch Chief for the Natural Resources Division at the Office of Management and Budget; Teresa A. Gorman, Assistant to the President; and James Mahoney, Director, National Acid Precipitation Assessment Program. They also met several members of the Environmental Protection Agency (EPA), including Daniel Beadsley, Judith Gleason, Gary Waxmonsky, and Amy Evans – all of whom are active in EPA's expanding initiatives in Eastern and Central Europe that led to the Fall 1990 opening of the Regional Environmental Center in Budapest, Hungary. The Center, jointly sponsored by EPA and the European Community, is designed to serve as a training center and data clearinghouse for Eastern and Central European environmental scientists and policy makers.

In Washington D.C., as elsewhere, government officials and staff are key players in the development of environmental policies. But people outside of government also play essential roles, including those who work for the press and for non-governmental, private, nonprofit environmental research and advocacy groups.

The European visitors became acquainted with this aspect of the U.S. policy equation through talks from John Anderson, an editorial writer at *The Washington Post*, who analyzes environmental and energy issues for one of the United States' most influential newspapers; Richard Lirhoff from The World Wildlife Fund and Conservation Foundation, one of the nation's–and world's–largest environmental organizations; and Ellen Silbergeld from the Environmental Defense Fund, a private, non-government environmental organization that concentrates its efforts on litigation to redress what it perceives to be the adverse ecological and human health impacts of environmental abuse and neglect. At the conclusion of their busy two work days in Washington, D.C., the group heard from James Reisa, who directs the National Academy of Science's (NAS) Board of Environmental Studies and Toxicology.

The Symposium

After listening to American environmental experts for two weeks and learning how U.S. environmental policies and programs are formulated, the European officials traveled to Maryland's State House in historic Annapolis for a two-day symposium. These sessions were led by Milton Russell, a former EPA assistant administrator who currently holds a joint appointment with Oak Ridge National Laboratory and The University of Tennessee's Department of Economics and the Energy, Environment, and Resources Center, and by E. William Colglazier, director of the Center.

The setting was appropriate for the occasion. Seated within the nation's oldest working state house and within an hour's drive of the nation's Capitol and White House, the Eastern and Central Europeans were surrounded by the symbols and workings of the U.S. federated political system which provide the basic framework for American environmental policies. There, the European officials spoke freely about what they had learned from the trip and what they hoped to carry with them to their new or radically transformed political environments at home. They were joined in this stateside "cross-Atlantic conversation" by U.S. economists, environmentalists, and policy analysts–Stanley I. Auerbach of Oak Ridge National Laboratory, Robert A. Bohm of The University of Tennessee,

Robert Hahn of the American Enterprise Institute, George Hyfantis of International Waste Management Systems, Paul Portney of Resources for the Future, Philip Warburg of the Environmental Defense Fund, Daniel Beardsley and Stanley L. Laskowski of the Environmental Protection Agency, and Richard Lirhoff of the World Wildlife Fund and Conservation Foundation.

What follows, in part, is an interpretative summary of this spirited exchange, combined with an assessment of the state of environmental policies in the United States on the one hand, and Eastern and Central Europe on the other.

This tour also marked a significant step forward in The University of Tennessee's efforts to spearhead the creation and growth of the multinational Alliance of Universities for Democracy–a joint venture of U.S. and Eastern and Central European universities whose mission, as stated in its charter, is to foster intellectual and cultural exchanges between these two kindred regions of the world.

Many of the roots of America's intellectual and cultural heritage lie in Eastern and Central Europe – roots that have been severed in the past 45 years by the geopolitics of the Cold War. Citizens from Eastern and Central Europe, in turn, could neither learn from nor contribute to the flowering of scientific and technological advances that have taken place in the West since the end of World War II, and as a result, both their economies and environments have floundered.

Now that the once-impregnable barriers between East and West have been broken, a free flow of information and a network of professional and personal contacts promise to follow. The Alliance was officially launched in November 1990 with a Charter Conference and signing ceremony in Budapest, Hungary.

The Issues

During the past year, Eastern and Central Europe have undergone a revolution. For the most part, it has been a remarkably bloodless revolution. The nations within the region–Poland, the German Democratic Republic, Czechoslovakia, Yugoslavia, Bulgaria, Romania, and Hungary–must now seek to transform their political system and economies at the same time they seek to upgrade their environment. The legacy of poverty, pollution, and political oppression which has characterized the past 45 years clearly illustrates that the three forces are closely linked. In fact, as the economies of Eastern and Central Europe deteriorated rapidly during the past decade, one of the most visible signs of the deterioration was environmental degradation.

As the region's recent history has dramatically illustrated, governments desperately trying to stay afloat cannot afford to keep the air and water healthy and clean, and people who are denied a voice in the political process cannot express their concern for the poor environmental conditions in which they must work and raise their families. As Robert Hahn commented during the symposium, "Eastern and Central Europe show what happens when the economy and environment are not tied together. If the economy slides, then political officials are willing to sacrifice the environment."

Years of abuse and misplaced priorities have left the nations of Eastern and Central Europe with an enormous set of tasks to confront as they enter the post-Communist era. The first order of business, according to most tour participants, is to transform the political system: to secure open and fair elections and to assure that issues can be freely debated. The second order of business, according to them, is to restructure the economy: to create a system of free markets and private enterprise and to establish an appropriate set of laws and regulations that place the system on a firm foundation.

That economic transformation, they hope, will take place with a minimal amount of disruption to the lives of Eastern and Central Europeans–although many tour participants agreed that reduced government subsidies, higher prices, and closed factories could mean inflation, higher unemployment, and lower real income in the short term. The prevailing sentiment was that economically "things could get worse before they get better."

Such a downturn, however temporary, could seriously undermine public support for environmental reform, especially if the so-called "velvet revolution" (a term used in Czechoslovakia) carries a delayed

wallop that further staggers a regional economy that is virtually out on its feet. As Svatomir Mlcoch of Czechoslovakia said, "The new freedom has unleashed a flurry of public fear. The government cannot ignore this fear. With everything a problem, it is difficult to set priorities."

But high levels of fear within the region have been matched by high levels of hope. Now that the barriers between East and West have been breached, capitalist goods and ideas have flooded into Eastern and Central Europe. After years of sacrifice and repression, citizen expectations run deep while their patience runs thin. The citizens of Eastern and Central Europe hope to experience a rapid improvement in their standards of living and are unlikely to tolerate an extended period of uncertain or uneven progress. For many of these Europeans, the events of the past year have encouraged them to believe that these dreams can be realized–certainly not overnight, but at least in the course of several years. As Eva Kruzikova of Czechoslovakia said, recent events in the region have created "a unique occasion to build an effective society."

The governments, however, will face enormous pressures to foster rapid economic progress–to blaze a political and economic trail that will enable their people to catch up to the West as quickly as possible. To be successful, Eastern and Central European national leaders may have to achieve in five years what it took Western European nations 45 years to accomplish. Despite her optimism, Eva Kruzikova cautioned, "The people of Eastern and Central Europe are impatient. They would like to have everything as soon as possible."

Given the realities, what part will the environment and environmental concerns play in the restructuring of the societies? Even if the environment is not the main player, it will certainly have an important role in the supporting cast. Politics and economics will be at center stage, but whether the audience cheers or jeers the performance of the leading politicians and economists will in some measure depend on how effectively they address their nation's environmental problems.

The reasons for this linkage become obvious to anyone who visits the region or has read or seen media reports. Eastern and Central European nations suffer from a host of serious environmental problems, almost all of which have been caused by an outdated industrial system and a hostile political environment that paid little attention to any factor other than state-imposed production quotas–Eastern and Central Europe's command economy equivalent to the West's profit-oriented bottom line. Unlike democratic capitalist societies, however, the Communist system did not allow room in the decision-making process either for the discipline of the market place or the mitigating voice of public opinion. Tour participant Delcho Vitchev of Bulgaria echoes a sentiment shared by many others in the region when he writes: "We have lived in a country burdened with a largely anti-ecological economy. Government "apparatus" has "run like a steamroller over both the environment and public opinion." Or, as Ewe Schlenker of the German Democratic Republic notes, "After World War II, ecological war was launched" throughout the region. Each nation not only contaminated its own air and water but also "used" its borders as convenient entry points "to transmit pollution to neighboring nations."

The Problems of Pollution

Air pollution. Past policies have left Eastern and Central Europe with some of the most serious air and water pollution problems in the world. In the East German industrial heartland at Bitterfeld near Leipzig, the pollution-laden air has caused serious health effects among adults and threatens the future well-being of the region's children. In Krakow, Poland, the expected lifespan of an average male is 16 years less than in Sweden, and an infant is four times more likely to die–all victims, in part, of Krakow's 500-acre, 40-year-old Nova Huta Steel Mill, the largest industrial complex in Eastern Europe. Kaizimierz Liszka of Poland notes that since the rise of the trade union Solidarity a decade ago, public concern for the environment–although muted–has hesitantly focused on two issues: water and air pollution. The government's response was equally hesitant, but any environmental measures taken addressed the nation's water pollution problems, simply because water pol-

lution was most worrisome in the capital city of Warsaw where most Communist party leaders lived. As a result, Poland's air pollution problems were ignored.

Bitterfeld and Krakow now vie for the dubious honor of the most polluted industrial area in the region, if not the world. They are, however, only the most dramatic examples of systemic, region-wide air pollution problems. These problems, caused by emissions of carbon dioxide, sulfur dioxide, nitrous oxide, untreated fine dust, fluorin, and heavy metals, plague every industrial region of Eastern and Central Europe from Gdansk on the Baltic Sea in Poland to Varna on the Black Sea in Bulgaria.

As Milton Russell pointed out in his opening talk, pollution in the West is viewed as an unwanted by-product of the industrial process and is subject to vigorous public policy restraints and legal restrictions. In Eastern and Central Europe under postwar Communist regimes, production quotas always superceded pollution worries.

The results of this imbalance are clearly visible in the grey, sickly air that now hangs over the region's industrial centers. And the human impacts are reflected in the chronic respiratory problems and high incidence of emphysema, bronchitis, and cancer that afflict residents who live nearby. For example, Fedor Cerne of Yugoslavia estimates that 25 percent of the people in his native province of Slovenia suffer serious respiratory ailments that can be linked directly to the air pollution caused by aging industrial and power plants that have operated for decades without adequate environmental oversight or regulation.

Water pollution. Air pollution is one critical problem; water pollution is another. Just as untreated gases and chemicals have been emitted from smokestacks, so too have industry's noxious liquid and solid waste byproducts been channeled into the region's rivers and lakes. The Danube is highly polluted, as is the Vistula and the Elbe. The region's groundwater is threatened and the Baltic and Black Seas–which have served as large "sinks" for the region's river-carried pollutants–are under serious environmental stress. In some areas, recreational activities such as swimming and fishing have been restricted; in others, the drinking water is of marginal quality or even unsafe. Again, Fedor Cerne estimates that 90 percent of the surface water in Slovenia, Yugoslavia, is contaminated, largely due to unsound industrial and commercial practices.

Because environmental monitoring under the Communist regimes was conducted either in secrecy or under restricted and unreliable research conditions, no one is sure of the true extent of the problem. And because water pollution, especially groundwater pollution, often is not as visible as air pollution (and its human health effects often are more variable and less chronic), a thorough assessment of its adverse impacts will require even greater study.

Acid rain. Another interrelated environmental problem that also causes concern is that the region suffers from the effects of acid rain. Its forests have been victimized by large doses of sulfur dioxide and nitrous oxide emitted into the air by aging coal-fired electric power plants that burn high-sulfur coal. The plants, some of which have been in operation for 30 or 40 years, have yet to be retrofitted with environmental controls such as scrubbers or tall stacks. In fact, years of deferred maintenance and poor upkeep curtailed their efficiency and increased their adverse impact on the environment. Fedor Cerne now estimates that 40 percent of the forests in Slovenia have been damaged by industry-induced acid rain.

Acid rain also erodes the stone and marble of the region's historic churches and monuments–icons of the region's rich cultural heritage that could serve as the foundation of a lucrative, environmentally benign tourist industry now that these areas have been opened to Western travelers. If the current adverse environmental impacts are not reversed, both the region's spiritual centers and struggling economies could be further damaged in the process.

Waste mismanagement. Under Communist regimes, waste disposal–not waste management–often characterized the region's handling of its solid and hazardous waste. In East Berlin, the waste problem was compounded by the willingness of government officials to accept West Berlin's solid and hazardous waste

for a price; Willi Rolf Weiher of the German Democratic Republic says that political leaders then squandered the money on nonwaste-related activities. The extent of the problem, both in East Berlin and elsewhere, remains largely undocumented–again due to official government secrecy, poor management, and inadequate or unkept records. Other Eastern and Central European nations, even if they have not accepted the West's mismanagement, still must deal with their own–a job they have neglected for decades.

Given these circumstances, the nations of Eastern and Central Europe must address the most serious effects of mismanaged waste at the same time they examine the extent of the problem and devise a regulatory system to assure that new waste is not dumped into the environment. It is a tall order that will require a great deal of time, money, and human resources, as well as technical hardware and know-how from Western nations.

Nuclear power. Questions concerning the safety of nuclear power have haunted Eastern and Central Europe since the Soviet accident at Chernobyl in the spring of 1986. In fact, public confidence in nuclear power has been shaken more in Communist bloc nations than in the West because the region's nuclear plants depend upon questionable Soviet technology for their construction and inadequate Soviet training for their operation.

Citizens and public officials, however, face what many consider to be a Hobson's choice: if a nuclear plant is shut down, a province or region may have to endure electricity shortages or rely more heavily on coal-fired steam plants, a major source of the region's sulfur dioxide and nitrous oxide air pollution. Conversely, if a nation or region allows a nuclear plant to continue operation, it runs the risk of an accident with its attendant catastrophic environmental and health effects.

Even more than in the West, the Chernobyl accident (combined with the rise of democracy and dissent) has made nuclear power a contentious issue with no clear path to consensus. In Eastern and Central Europe, nuclear power promises to generate a heated public debate that could divide the region's growing environmental community.

The outcome of the debate could also have a significant bearing on the future of energy and environmental policies throughout the region. In fact, it could play an influential role on how environmental issues are treated within the larger political context, especially if nuclear power drives a wedge between national and regional environmental advocacy groups. If and when nuclear power goes on public trial in Eastern and Central Europe, the environment, ironically, could be brought forth as material evidence for either the prosecution or defense. It could thus serve as a flash point of contention for the future direction of each nation's energy and environmental policies in the post-Communist era.

National Will/Regional Diversity

Encasing each of the specific environmental issues is the delicate question of transboundary pollution and regional environmental responsibility and cooperation. The seven nations of Eastern and Central Europe (Poland, Germany, Czechoslovakia, Hungary, Bulgaria, Romania, and Albania) cover approximately 490,000 square miles of land–a size comparable to eight eastern and midwestern states in the United States–New York, New Jersey, Pennsylvania, Ohio, Indiana, Illinois, Michigan, and Wisconsin. Approximately 140 million people live in Eastern and Central Europe, compared to approximately 90 million people in the eight U.S. states, which are among the United States' most densely populated. Put another, more dramatic way, Eastern and Central Europe's population is more than one-half that of the entire United States, but its land mass is only 15 percent as large.

Moreover, despite the serious problem of race relations, the people of the United States largely share a common language and national history; the people of Eastern and Central Europe do not. In fact, centuries-old ethnic, religious, and regional animosities have resurfaced in Eastern and Central Europe now that the heavy, autocratic fist of Communist repression has been repelled.

The diverse, densely populated nations of Eastern and Central Europe are thus

divided by national political boundaries and beyond that by regional ethnic and religious affiliations. These national and ethnic divisions run deeper than any trans-European political reform movement and will remain an essential feature of the region's cultural and social landscape regardless of the ultimate outcome of the changes now under way. However, because the region is small and because rivers such as the Danube and Elbe flow through more than one nation, Eastern and Central Europeans have and must share the same air and water.

Moreover, most Eastern and Central European nations also share a border with Western European nations. Therefore, environmental conditions in the East affect environmental quality in the West, particularly the condition of the air and water among the Scandinavian countries, the Federal Republic of Germany, Italy, and Austria. During the Cold War, the Iron Curtain may have blocked the free flow of information and intra-European social and cultural exchanges, but it could not inhibit the intricate natural ties that bind the European continent's environment into a unified ecological system.

This same interdependency will persist in the post-Communist era. For example, Wolfram Tertschnig of Austria estimates that one-quarter to one-half of the ambient air pollution in his nation originates from non-Austrian sources located primarily in Czechoslovakia and Hungary. He notes that Austria has enjoyed a strong 3 percent annual growth rate in gross national product during the past few years and has environmental laws and regulations comparable to the United States. Yet, because of its proximity to other nations, Tertschnig asserts that it is impossible for Austria to solve its environmental problems without the cooperation of its Eastern and Central European neighbors. Similar sentiments were expressed by all the tour participants.

As Robert Hahn of the United States detected during the symposium, there was a persistent "discrepancy" between the American and European tour participants when it came to "international" environmental questions. For the Americans, international issues revolve around concerns for ozone depletion, climate change, habitat loss, and species extinction; for Europeans, international questions often boil down to inter-European air and water pollution problems. In effect, for the United States, "international" carries a global connotation; for Europeans, particularly Eastern and Central Europeans, it is restricted primarily to regional concerns.

Nevertheless, as many of the tour participants and their American counterparts agreed, the most urgent environmental task for each Eastern and Central European nation is to put its own house in order: that is, each must take steps to upgrade environmental research and monitoring, rewrite national laws and regulations to conform to a market economy, and improve enforcement so that the system is both stringent and equitable. Regional and international agreements are essential, but such measures will prove difficult to attain and impossible to implement unless each participating nation has effective national environmental policies and regulations in place before international agreements are drafted and signed.

The problem with securing strong, yet individualized, national standards is that Eastern and Central Europe is a diverse region. Each nation within the region does not and will not have the same level of resources–or perhaps the same level of political determination–to deal with its environmental problems.

For example, with the reunification of the Democratic Republic of Germany and the Federal Republic of Germany, forty years of separation may cause a degree of internal tension, especially since the Federal Republic of Germany entered the reunion from a position of undeniable strength. Expenses to upgrade the economy and environment of the eastern half of the country were estimated by Hellmut Koenigshaus of West Germany to run at least $250 billion during the next decade. The burden of that economic investment may also strain the government's budget and spark domestic political debates as taxes are raised to pay for the initiatives.

At this point, however, the process of reunification has been remarkably harmonious. Thus East Germany enters the post-Communist era with many positive attributes that its eastern and central European neighbors do not share: a suc-

cessful political system that it has only to join, not create; a ready source of capital and proven technology; a set of pre-existing regulations; and little need to seek international assistance or aid because its fellow Germans will provide much of the money and expertise.

The path to reform in East Germany will undoubtedly contain some unexpected twists and turns–and perhaps obstacles–that may sidetrack and impede the journey. Nevertheless, East Germany, whose economy is now being propelled by the well-tuned economic engine of West Germany, is in an envious position. Most observers anticipate dramatic improvements in its economy and environment before the end of this century, if not sooner.

Without the benefit of East Germany's kindred relationship with West Germany, Poland has elected to re-energize its society and economy through "shock treatment." It has moved at remarkable speed to eliminate all vestiges of communism from its political system, sell its state industries to private investors, and rewrite its laws and regulations to create a new capitalist order atop the rubble of the failed Communist regime. Poland's leaders hope that this strategy will not only be the most rapid means to economic and environmental improvement but that the government's unquestioned commitment to radical reform will convince Western capitalists to invest in Poland's future. Part of that investment, Poland's leaders hope, will come in the form of capital to retrofit old industrial firms and to build new ones that will be more efficient and less damaging to the environment.

Other Eastern and Central European nations, such as Czechoslovakia and Hungary, also seek rapid reform. However, for several reasons, their initiatives have proceeded at a slower pace. Neither of these nations experienced a decade of repressed but highly organized opposition as existed in Poland during the 1980s through the underground work of the trade union Solidarity. Hungary's anti-Communist opposition was brutally repressed and crushed by Soviet troops during the 1956 revolt; the same fate awaited the aborted reform efforts in Czechoslovakia in 1968.

Moreover, both Czechoslovakia and Hungary have large, independent-minded ethnic groups that pose a serious challenge to their national governments and make the issue of regional equity central to the political process. Because of these different political realities, Czechoslovakia and Hungary are a step or two behind Poland on the road to political and economic reform. Both these nations, however, are likely to take a similar route, although at least initially more slowly and cautiously than their Polish neighbors.

Poland has clearly linked environmental improvements to political and economic reform. Its political leaders are saying that the faster Poland accomplishes the latter, the faster the nation will enjoy a healthier and cleaner environment. To this end, it has negotiated a bilateral agreement whereby Sweden will provide Poland with state-of-the-art technology to reduce its high levels of air pollution. For Poland, the arrangement is another sign of the nation's renewed relationship with the West–an encouraging indication that Western capitalist nations have accepted Poland's rapid political reforms as permanent and irreversible. For Sweden, the expenditure is more than a humanitarian gesture. It is viewed as a wise investment that will save Sweden substantial sums of money that otherwise would have to be spent on pollution abatement if Poland's industrial emissions continue to drift unchecked and untreated across the North Sea.

As Michal Zaremba-Czereyski of Poland noted, Western European nations could obtain a greater environmental return if they invested in the East now instead of spending their money later to mitigate the adverse impacts once the pollution crosses their borders. In fact, Wolfram Tertschnig estimates that each $1 investment in Eastern and Central Europe is equivalent to a $5 investment in the West–a sad reflection of the depth of the environmental problems that the formerly Communist bloc nations now face. "Things are so bad," he says, "that improvements are easy."

Thus bilateral agreements similar to this Polish/Swedish arrangement are likely to be replicated time and again as Western and Eastern European nations seek to address their mutual environmen-

tal problems and as the changes wrought by the political revolutions of the past year become institutionalized in law and practice.

Although Germany, Poland, Czechoslovakia, and Hungary appear to be moving closer to the ways of the West, the future path to reform for other Eastern and Central European nations–particularly Romania, Bulgaria, and Albania–remains less clear. Albania, in fact, has been largely untouched by the dramatic political and economic changes that have rippled through the rest of the region.

In Romania, the revolution has not been peaceful, the political and economic transformation has remained incomplete, and the ability of Romanians to restructure their economy and improve their environment remains dubious. Until political stability based on democratic values and private market principles firmly takes hold, Western aid and investment will not be forthcoming.

Similar problems and circumstances apply to Bulgaria, where open elections led to a return of the Communists, and hostilities between the people and the military remain visible on the streets of the capital city of Sofia.

Thus, on closer inspection, Eastern and Central Europe is a multinational and multi-ethnic region of many distinct parts and personalities. Resources vary considerably, the pace of political and economic reform is inconsistent from one nation to the next, and the prospects for outside capital are much brighter for some nations (e.g., Poland) than for others (e.g., Romania).

For these reasons, the future course of environmental improvements throughout the region is difficult to calculate. The legacy of postwar Communist rule illustrates that the state of the environment often depends on the state of the economy–and that the state of the economy, in turn, often depends on the state of the political system.

And in the West, 20 years of active environmental concern has shown that environmental problems defy political boundaries, whether the question is acid rain in Sweden or Norway or river pollution along the Pigeon River in Tennessee and North Carolina. The effectiveness of environmentalism will again be tested in Eastern and Central Europe as these nations seek to dramatically transform their societies. The extent of environmental improvement, therefore, may depend largely on the pace and extent of political and economic reform. Or as Eva Kruzikova said, "If we solve our economic problems, we may well solve our environmental problems."

Strengths Amid Weakness

Eastern and Central European nations thus face many obstacles and uncertainties in the months and years ahead. But they also enter this new era of freedom with deeply-rooted strengths that can help them achieve the reforms the people desire.

First, the region's economies, although inefficient and unproductive, are not in total shambles. The German Democratic Republic is not Bangladesh, and Poland is not Cambodia. Economic restructuring throughout the region begins from a limited industrial and technological base, but even such a limited base is better than none at all.

Second, Eastern and Central Europe enjoy a long cultural tradition that places great value on education. The region's public education systems are rigorous, if unimaginative, and have turned out a literate youthful population with a sturdy grounding in basic skills. Eastern and Central Europe's higher educational systems have been partially frozen in time for the past 45 years, plagued by a lack of equipment and a means for open intellectual exchange, both of which are essential for world-class research and scholarship. Nevertheless, the region's universities have shown a resilient strength, especially in the basic sciences. For example, it is estimated that Czechoslovakia has more than 200,000 scientific researchers.

Such an army of talent should prove invaluable as university administrators, faculty members, and researchers break the walls of intellectual isolation and join the world of Western scholarship and technology after a 45-year absence. Vladimir Lenin, the leader of the 1917 Communist revolution in the Soviet Union and a key architect of the international Communist movement, claimed that it would be the intelligentsia and skilled workers who would spearhead Eastern and Central Europe's Communist

revolution; ironically, it may be these same social classes that lead the region into a new era of democracy and private enterprise.

Eastern and Central European nations also should benefit from a close working relationship with Western nations. The benefits, such as those extended by Sweden to Poland, may sometimes come in the form of direct technological aid to curb transboundary pollution, but more often they will entail private investment–derived from East-West joint ventures or Western corporate consortiums–that are designed primarily to generate a profit.

Western Aid and Capital

However, the creation of a Euro-American eco-Marshall Plan as expressed by some European members of the tour (and particularly by Angela Lely of Hungary), is probably an unrealistic goal. According to the U.S. economic and environmental experts who attended the Annapolis symposium, Western governments simply do not have sufficient capital to address the scope of Eastern and Central Europe's environmental problems. It is estimated, for example, that the Marshall Plan cost the United States approximately $125 billion in current (1990) dollars; economists claim that a similar venture for post-Communist Eastern and Central Europe could run $50 billion–a financial commitment that Western governments are likely to avoid.

Moreover, the U.S. symposium participants pointed out that some Western political leaders fear that large environmental aid packages for Eastern and Central Europe could set a precedent that would make environmental initiatives elsewhere contingent upon Western aid. If an eco-Marshall plan were launched in Eastern and Central Europe, the American participants reasoned, then Asian, African, and South American nations could demand the same consideration. Under such circumstances, global environmental improvements could come to depend on the benevolence of Western governments, a prospect that raises questions about national responsibilities and long-term commitments. It also raises the specter of holding global environmental reforms hostage to direct aid by wealthy Western nations–an international political environment that would serve the interests of neither the East nor West.

Thus, it is unlikely that Western nations, and especially the United States, will extend a tremendous amount of direct aid for environmental reform in Eastern and Central Europe. Some environmental benefits, however, will come as a result of private investments, especially for those Eastern and Central European nations that take steps to assure investors that their capital will be secure and transportable. As Robert Hahn convincingly argues, before risking capital in these once–Communist economies, bankers and business executives must be confident that their capital is safe and that it can be withdrawn once a contract expires and is not renewed.

Legal and regulatory reforms that guarantee the sanctity of private contracts, followed by economic practices that illustrate Eastern and Central Europeans' full acceptance of the capitalist rules of the game, could lead to an influx of Western and Asian private capital. Without such assurances, such capital may not be as plentiful as Eastern and Central Europeans hope.

Capitalists would like to tap the Eastern and Central European market; these new European democracies, in turn, desperately want the money and products that the West can supply. Potential obstacles to the channeling of capital are lack of investor confidence in the West and differing politics and tradition in the East. These two potential impediments, as Robert Hahn also contends, are inextricably linked.

Dramatic political change for most of these nations is inevitable; changes in business behavior and attitudes, given 45 years of Communist rules and repression, may come more slowly. How these factors will affect regional investments in new less-polluting industrial plants and in technologies that reduce pollution among existing industries remains to be seen. One U.S. financial expert is less than sanguine in his forecast. "In dealing with assistance to the Eastern European countries," he says, "on balance, it seems that the West will be long on advice, technical help, and moral support, but rather short on cash."

And how will the United States respond to the dramatic changes in Eastern and Central Europe? Enormous federal budget deficits make it unlikely that the U.S. government will provide much direct financial aid–either for economic restructuring or environmental improvements. The United States, however, is eager to see the nations of this region succeed and prosper. The Cold War's major front was in Eastern and Central Europe, where capitalism and communism met along a border of distrust and suspicion. It was here that Europeans, especially those living on the eastern side of the armed border, suffered the most negative consequences of postwar political and military tensions.

From a strategic standpoint, however, the Cold War was largely America's war. For many Americans, the emergence of democratic reforms in Eastern and Central Europe during the past year vindicates the nation's Cold War strategies of containment, resistance, and military strength–despite the costs. Now that democratic values and free market principles are again taking root, the United States would like to assist in the reform efforts. And as Gary Waxmonsky of the EPA pointed out, "Environmental welfare is a source of economic well-being and political stability."

In short, America has invested a great deal of resources over an extended period to help Eastern and Central Europe reach this critical stage in its history. The United States also envisions the opening of a potentially lucrative market that would be receptive to American goods and services. Thus economic self-interest is also a factor in the U.S. response.

But beyond questions of diplomacy and trade, there is a principled abstraction that is driving America's sincere interest in this region: economic and political success in post-Communist Eastern and Central Europe would also seem a reaffirmation of America's traditional political and economic values.

Although greatly appreciative of the efforts, several European tour participants expressed surprise at America's deep concern for their regions in general and for their environmental problems in particular. Eastern and Central Europe, they reasoned, is more than 5,000 miles from America's east coast; Europe's air and pollution problems have little direct bearing on the quality of the environment in the United States; Communist expansion no longer poses a threat to U.S. security; and the United States faces a host of serious domestic problems–the federal deficit, the uncertainty of foreign oil supplies, international competitiveness, and drugs–that all seem of more immediate and compelling concern. What is not given enough weight in this reasoned calculation is the power of principles, especially when these principles have served as a prime source of national identity and a flash point for troubled East/West diplomatic relations for the past 45 years.

From Principles To Experience: the U.S. Environmental Movement

Much of the environmental tour, both in Washington, D.C. and elsewhere, was spent discussing U.S. economic and political principles and practice–issues of federal and state responsibilities, the role of the courts, the impact of regulations and economic incentives, the discipline afforded by the market place, and the power of public participation and citizen protest.

For the past two decades, the United States has experienced a vigorous and sustained environmental movement, which has caused environmental and human health issues to rise near the top of the policy agenda. U.S. historians and political commentators have described this movement as the second great surge of environmentalism in 20th century America (the first being the conservation movement of the Progressive era, which took place during the two decades preceding World War I).

During the most recent era of environmental activism, which after 20 years of vigorous and sustained effort shows no signs of slowing down, the United States has gained invaluable experience in the development and implementation of environmental laws and regulations. Politicians have learned a thing or two about the role of public participation and grassroots activism; today, in fact, politicians are fully aware that they ignore public support for environmental issues at the risk of their political careers. With increasing success, economists

have sought to address environmental problems through the application of market principles. And scientists have begrudgingly discovered the limits of rational discourse in a world filled with uncertainty and emotion. To paraphrase one observer, in a democracy the people are always right, even when their facts are wrong.

The internal dynamics of the environmental movement in the United States has experienced significant alterations during the past two decades. Besides its tremendous growth–some environmental groups now have more than one million members–the movement has shifted from a position of idealistic opposition, which was central to U.S. environmentalism in the 1960s, to the role of an established key player in the political process in the 1990s. What the movement may have lost in principle it has largely gained in political influence and power.

But internal tensions, as Richard Liroff and others suggested, have surfaced as a result of these changes. National environmental groups such as the National Wildlife Federation, the World Wildlife Fund and Conservation Foundation, and the Natural Resources Defense Council, have been criticized by grassroots organizations, such as EarthFirst! and the Citizen's Clearinghouse for Hazardous Wastes, for having "sold out" to the political establishment. These tensions, combined with the growing complexity of environmental issues, have splintered U.S. environmental groups into areas of specialization: research (e.g., the World Resources Institute); litigation (e.g., Environmental Defense Fund); and citizen protest or direct action (e.g., Greenpeace).

Today in the United States, it is more accurate to refer to the nation's environmental *movements* than to a single environmental movement. Such a transformation is a reflection of the vitality of environmentalism in America, as well as an abiding fact of political life in a democracy: it is much easier to achieve consensus from the sidelines (based on a shared criticism of existing circumstances) than it is from the playing field (where decisions, choices, and tradeoffs must be made). Once a group or movement enters the political arena, the stakes get much higher and disagreements–even among former team members who share a common goal–are bound to occur.

As the nations of Eastern and Central Europe develop their own democratic frameworks and as environmental advocates gain influence in the political process, it is likely that these nations will experience similar schisms within their own environmental movements. Such divisions have already surfaced over the issue of nuclear power–although until a nuclear plant is permanently shut down, the discussion is likely to remain muted. Beyond nuclear power, internal tensions will undoubtedly mount among the region's environmentalists as tradeoffs between the environment and the economy are directly confronted. Such tensions, in fact, may become more volatile in Eastern and Central Europe than in the United States because of the strategic position of the "Green" parties. No comparable political organizations, dedicated exclusively to environmental issues, exist in the United States.

Should an inefficient plant that pollutes the environment be closed, even at the cost of hundreds or thousands of jobs? How should the government deal with citizens who suddenly find themselves without work or income, both of which (however insignificant and paltry) had been guaranteed under Communist regimes? Who should pay for the hardships and dislocations caused by the plant closing? Who should pay for the clean-up, especially in a society where all industries have been owned by the state for the past half century and private capital is likely to remain scarce in the foreseeable future? In short, how should the nations of Eastern and Central Europe seek to balance concern for the environment with concern for the economic welfare of the citizenry, especially when these two basic social principles appear at times to be in conflict?

These are the difficult questions that Eastern and Central Europeans will have to face in the months and years ahead. How each government addresses these complex tradeoffs could determine how long it stays in power; how each nation's nascent environmental movements react to these complex issues could determine both the future strength of environmentalism within this region and the role that

environmental concerns play within the larger political and economic context.

Lessons in Practice

During the past two decades, the environmental movement in the United States–spearheaded largely by vocal, dedicated citizen groups, non-profit public-interest institutions, and governmental agencies–has grown and changed in response to the public's increasing concern for the environment and the growing impact and complexity of environmental debates and policies.

An equally important change has taken place in government. Nineteen-seventy was a benchmark year for U.S environmentalism–as significant in its own way as 1872, the year in which Yellowstone, the world's first national park, was created in the American West, or 1905, the year in which the federal government established the National Forest Service within the U.S. Department of Agriculture to assure the long-term sustainability of the nation's publicly-owned forest lands.

On January 1, 1970, then President Richard M. Nixon signed into the law the National Environmental Policy Act, which created the Council on Environmental Quality to advise the federal government's executive branch on environmental matters and to incorporate environmental awareness into the government's planning process. On December 31, 1970, the President signed the Clean Air Act, the nation's first law to seek a comprehensive nationwide solution to an environmental problem.

During the same year, Congress created the Environmental Protection Agency, the nation's first agency dedicated exclusively to environmental issues. And, on April 22, 1970, millions of Americans gathered throughout the nation to celebrate the first Earth Day and to express their collective commitment to the environment.

Earth Decade?

This flurry of activity–a powerful mixture of executive orders, congressional laws and regulations, public protest, and scientific research-heralded a new environmental era. It also established a framework for U.S. environmental policies that was to remain in place for the next decade.

First, the federal government became the primary force in environmental legislation. Throughout the 1970s, federal laws–whether designed to address air, water, or waste management problems–served as the building blocks of the nation's prevailing environmental procedures and standards. Private industry was required to adhere to these regulations or risk the possibility of fines or costly and embarrassing law suits. And state governments were forced to adopt these procedures and standards as a prerequisite for many federal grants and loans. For example, no major construction project that used federal money was approved without an environmental impact assessment. Such projects included the construction of highways and sewer systems, dams and reservoirs, and federal military installations and office buildings. Within this political arrangement, state governments were clearly a junior partner.

Second, laws and regulations adopted in the United States during the 1970s addressed environmental issues on a "medium-by-medium" basis. Policies designed to reduce water pollution, for example, were drafted with little reference to how land use and waste management practices affected the quality of the water resource. The water, not the land around it, was the prime consideration, although scientists understood that what happened on the land often had a direct influence on the ecology of the river or lake nearby. If hazardous wastes managed onsite posed a threat to the land, then onsite tank storage or incineration was often introduced as an alternative, without careful consideration of the potential effects such policies might have on the groundwater or air. Low-level radioactive waste, especially at the nation's nuclear weapons' facilities, was often placed in containers that were set above the ground or buried underneath it–or it was shipped to remote sites that had been authorized by the federal government to store and manage such waste. Only now are Americans learning of the potential environmental threat that such management practices posed to the surface and groundwater as the containers corroded, cracked, and leaked.

Thus, instead of seeking ways to permanently resolve the problem, management practices often focused on moving the problem from one medium to another–that is, of shifting the potential impact from water to land or from land to air. Scant effort was made to control and reduce pollution and waste products at the source, so there would less of it to manage. Until recently, waste minimization was simply not a high priority on the U.S. environmental agenda. Dealing with pollution problems at the "end of the pipe," rather than addressing the problems at the source, remained the prevailing approach to environmental affairs in the 1970s and much of the 1980s. During this time, "the medium provided the message," and pollution control, not abatement, was the preferred strategy.

Nevertheless, America's major air and water pollution problems were clearly recognizable: the noxious, air-borne waste products of the nation's large steel mills, such as those that stretched along the banks of the Allegheny and Monongahela rivers near grey-skied Pittsburgh, or the sludge dumped into the blackened shoreline of the Cuyahoga River and Lake Erie near Cleveland by industrial and commercial firms in northeastern Ohio. Decades of dumping slowly but surely suffocated the river and lake and brought them close to environmental entropy in the early 1960s.

Thus, the third distinctive aspect of American environmental legislation and regulation 20 years ago was that the culprits could be easily detected, whether they were steel mills, electric utility power units, paper-processing plants, or chemical-manufacturing firms. These sectors of the U.S. economy still generate unwanted waste products in the 1990s, but the nation has made impressive strides in the treatment of industrial pollutants from large single sources. Such improvements in pollution control are testimony to the value of U.S. environmental legislation and should serve as a source of inspiration for Eastern and Central Europeans as they grapple with their own long-neglected environmental issues. The problems of pollution may look bleak and intractable today, but Pittsburgh is a shining example that the environmental battle can be successfully waged if a nation and region can marshall sufficient capital, expertise, and determination to conduct a successful and sustained campaign.

The fourth aspect of environmentalism in the United States during the 1970s was the absence of a global agenda. In fact, U.S. legislation may have been national in scope, but the problems were largely viewed as local or regional in nature. Issues such as acid rain or the permanent storage of high-level nuclear waste generated heated interregional disagreements, but for the most part federal standards and regulations were applied to local or regional situations. Equally important, the environmental improvements that took place as a consequence of these federal measures could be witnessed and enjoyed by citizens living nearby. Even though environmentalists spoke of a "seamless web," suggestions then that environmental practices in New York City could have a direct bearing on environmental quality in San Francisco, let alone in Berlin or Tokyo, would have seemed far-fetched to most people. National standards and regulations provided the blueprint for environmental reform, but the application of these standards took place at local and regional levels where improvements could be witnessed by the citizens living nearby.

Thus environmental considerations during this period were largely relegated to resource and development issues close at hand–problems that were neither personal nor global in nature but were confined to a particular region or locality. Environmental debates and initiatives may have been formulated in Washington, D.C., but remedial efforts–mandated and directed by the executive branch and U.S. Congress–were launched in regions, states, and localities across the nation. Such policies made the declining state of the environment appear as a societal problem on the one hand and as a manageable, national-directed issue on the other.

During the past 20 years, the focus of the environmental movement in the United States has changed considerably. The federal government remains a key player, but the states–and even some regions and local communities–have acquired a level of expertise and commitment that make them more than supporting cast members, a role to which they

had been largely relegated in the 1970s. As Judith Gleason of the EPA and other U.S. tour participants frequently commented, "States now have more responsibility." They now often carry out federal initiatives, with Washington simply providing "oversight and evaluation."

States also have directed some ambitious plans of their own. New Jersey, for example, has mandated management procedures for hazardous waste that in some instances are more stringent than the federal standards. Southern California, home of car-dependent Los Angeles and site of the nation's most serious levels of urban ozone, has begun to address this issue aggressively–in fact, some would contend more aggressively than the federal government's proposed efforts in pending legislation to re-authorize the Clean Air Act.

The South Coast Air Quality Management District, for example, has suggested measures that would alter southern Californian lifestyles. Some of these changes would be trivial (for example, eliminating propane cigarette lighters, barbecue lighting fluid, and gas-driven lawnmowers), but others would mark significant changes in the way southern Californians live their lives (for example, restricting automobile use during times of high pollution and increasing mass transit and ridesharing).

Other regions of the United States would currently find such measures both unnecessary and unacceptable (although Iraq's invasion of Kuwait last summer could force a change in American attitudes and behavior). Whether southern Californians are willing to accept them remains to be seen, but the fact that these options have been seriously debated–without a pressing crisis looming overhead–illustrates how far environmental issues in the United States have traveled at the state and local level during the past 20 years.

What is equally significant is that these initiatives are being proposed by a state-funded agency. During the 1970s, the federal government was often the watchdog for environmental laws and regulations. Today, the U.S. Congress and executive branch are as likely to be in the middle of the pack as they are leading the way. Once again, such U.S. trends could serve as a road map for Eastern and Central Europeans as they devise their own path to environmental reform.

If the institutional framework has been restructured in the United States, so too has the agenda. Concern for pollution has moved in two divergent directions. On the one hand, there has been increasing attention paid to small, multiple sources of pollution whose cumulative effect may have a significant adverse impact on the environment. These concerns have focused primarily on non-point sources (e.g., pesticides, fertilizers, and animal wastes) that have been washed and channeled from the land and now have infiltrated and contaminated surface and groundwater supplies, especially in rural areas. On the other hand, global environmental issues, such as global warming, species extinction, and the loss of tropical forests, have also risen to the top of the environmental policy agenda.

In a sense, what was once the core of the American environmental movement–the issue of industrial and commercial pollution–has been overshadowed recently by individualized, multiple sources of pollution on one end of the spectrum and broad, global pollution concerns on the other.

These shifts, to some degree, are a measure of the positive impact that two decades of federal laws and regulations have had on U.S. environmental conditions. They also reflect a fundamental shift in the U.S. economy from an industrial to service base. Because service-oriented industries are usually more environmentally benign, these economic changes have reduced the level of pollution without significantly impairing the nation's economic vitality–although some economists have argued that the loss of manufacturing jobs has permanently undercut the wages of the U.S. working class and has helped create greater economic inequality between the nation's rich and working poor.

Nevertheless, Michael R. Deland, Chairman of the Council on Environmental Quality, told the tour participants that during the past 20 years sulfur dioxide emissions in the United States have declined 20 percent and lead has been essentially removed from the air. These improvements took place at a time when the nation's population increased by more than 20 percent and the economy's

output rose by more than 75 percent. Such trends, Deland suggests, have "discredited the link between economic growth and environmental stress. They have proven, he adds, that "you can have one without the other." It is a lesson that he hopes the Eastern and Central Europeans would carry home with them in this new era of freedom and progress.

An Environment with Different Problems

The diminishing concern for single-source industrial and commercial pollution in the United States, combined with a rising concern for non-point source pollution, have made effective national legislation and regulation more difficult to design and enforce. When a factory or power plant is spewing dangerous gases and particulates, the sources of the problem can be readily identified and strategies can be targeted to the site. When, however, the sources of the problem are due to the agricultural practices of the nation's five-million farmers or the drifting of radon gases into millions of homes (due to the natural decay of uranium ore found in geographic formations throughout the nation), the problem defies a nationally legislated or regulated solution. Education and economic incentives, not the command-and-control tactics of the past, may be the most appropriate way to address the problem.

As for global pollution problems, they too (by definition) defy a national solution. Diplomacy and international agreements are the most effective strategies available to combat pollution problems that are due to the cumulative actions of many nations. The Montreal Protocol, a multinational agreement signed in 1987 to substantially reduce the worldwide production of chloroflourocarbons (CFCs), could serve as a model for dealing with other global environmental issues such as climate change, species extinction, wetlands loss, or forest depletion.

The agreement called for a 50 percent cut in the production of CFCs by the year 2000. This chemical–used in spray cans, foam insulation, and refrigerants (where it is commonly called by its brand name, Freon)–is the main cause for the depletion of stratospheric ozone, which creates a natural shield that protects human and plant life from harmful radiation. The original 1987 agreement was updated in the summer of 1990 at an international conference in London, where the industrialized nations agreed to an even more rapid phaseout.

In the post-Cold War era, the environment–as the Montreal Protocol illustrated–has the potential to serve as a forum for international dialogue and cooperation. The United Kingdom's Prime Minister Margaret Thatcher, once a relentless advocate of Cold War politics and now a sometimes strident spokesperson for the global environment, provides a striking example of how the world has changed during the past decade. In 1980, if the environment was mentioned at all during international discussions, it was certainly a low priority; today, the global environment is a primary issue on the standing agenda of world affairs.

Moreover, the expressions of concern for environmental issues frequently offered by the Soviet Union's President Mikhail Gorbachev illustrate that this is an issue where the East and West are quickly coming to a meeting of the minds–at least in terms of general principles. "It is safe to say," Gorbachev recently remarked, "that the ecological imperative has forcefully entered the policy of states' and people's everyday life." This unexpected but welcomed convergence of concern could have important positive consequences for dealing with environmental problems in Eastern and Central Europe.

But solutions to global environmental problems also raise some intricate diplomatic questions that will be difficult for the world community to address either effectively or equitably. Wealthy industrial nations have exploited the environment to achieve an unprecedented level of economic wealth. They now have the expertise and financial resources that allow them to address the environment as a critical issue. Developing or poorer industrialized nations simply do not have the same "luxury," because economic development remains their most urgent problem.

The leaders of developing nations have expressed concern about sacrificing economic growth for the sake of the

global environment; some have even suggested that the rising concern for global environmental issues among wealthy industrial nations represents an unspoken effort to keep developing nations in a subservient economic position. As the Cold War fades into history and East-West geopolitical tensions subside, north-south economic/ecological issues may intensify. With the hope of rapidly lifting their economies to Western levels, the nations of Eastern and Central Europe may sometimes find themselves identifying with the concerns of developing nations to the south, even as they seek to rejoin the community of nations to which Western democratic societies belong.

On the other hand, if developing nations come to enjoy rapid economic growth, their share of global pollution will rise substantially. For example, the developed nations could take significant measures to curb the emissions of greenhouse gases, but if China continues to build coal-fired power plants to fuel its economic development, the positive environmental measures taken by the West would be overwhelmed by China's energy-intensive efforts to advance its economy. Similarly, reforestation programs in the West would have a marginal environmental impact if the tropical rain forests in Brazil and elsewhere continue to be cleared at the pace of recent decades.

As the recent debates suggest, when financial resources are available, balancing economic and environmental concerns–although difficult–is much easier than when financial resources are scarce. The delicate and difficult issues of economic development versus environmental quality now being played out on the world stage are likely to be replayed on a smaller stage in Eastern and Central Europe as these nations seek to upgrade their economies at the same time they rejoin an international community highly sensitized to global environmental issues. Hellmut Koenigshaus of the Federal Republic of Germany expresses this sentiment well when he says the fear is "that Eastern and Central Europe will become a repository for undesirable industries," a prospect that may help their feeble economies in the short term but could have undesirable environmental consequences in the long term.

Thus, as the word "movement" suggests, the world and U.S. environmental movements have experienced constant change during the past two decades. Many of the issues and institutional arrangements being discussed today were not even on the agenda 20 years ago, and many of today's central players–both within and among nations–were not even passive members of the audience during the policy debates of the early 1970s.

The environmental movement, as members of the tour heard during their two-week stay in the United States, has thus been in constant motion. As a result, the tour members witnessed not a snapshot of environmentalism, but a video of change with continually altered plots and players. Under these circumstances, casting the role of Eastern and Central Europe could be a difficult task because learning from the past is no guarantee of being able to devise effective strategies in the future.

Practical Lessons

Near the conclusion of the tour, Eva Kruzikova, who had helped create the new Czech Ministry for the Environment earlier this year, commented that Czechoslovakia is, at a minimum, 20 years behind the United States in its environmental policies and programs. The same observation, when carefully applied to the prevailing environmental circumstances in Eastern and Central Europe, could be made about virtually every nation within the region.

To be sure, these nations do not share the same level of wealth that the United States commanded when it launched its current environmental movement 20 years ago; neither do the citizens of Eastern and Central Europe enjoy the tradition of democratic participation that has been central to U.S. politics throughout American history. At the least, democratic impulses in Eastern and Central Europe have been derailed for more than two generations. And, perhaps most significantly, the region does not have the political structure to implement a nationwide environmental program comparable to the one launched by the United States in the early 1970s.

Nevertheless, Eastern and Central Europe's most critical environmental problems in the 1990s often resemble

America's most critical environmental problems of the 1970s. The prime sources of the region's pollution are industrial and commercial in origin; they are often clearly visible; and they create adverse health impacts that most scientific experts agree can be detected among the people who live near the polluting factories.

Like the United States in the 1970s, the nations of Eastern and Central Europe today (particularly Poland, the German Democratic Republic, Hungary, and Czechoslovakia) seem primed to address their most serious sites of industrial and commercial pollution as the first order of environmental business. Because these environmental goals will often coincide with national efforts to raise the productivity and efficiency of the industrial facilities, such strategies could lead to the closing of older plants. Thus Eastern and Central Europe's economic transformation could have a positive impact on the region's environment, providing that the societal dislocations caused by rising unemployment and higher prices do not unleash a political backlash that makes immediate economic stabilization and recovery the sole consideration.

"The United States and other industrialized nations," Michael Deland commented just before the symposium, "have shown that manufacturing processes and environmental quality need not be incompatible." Western nations, however, did not have to prove this point while they were seeking to radically transform their economies and societies. The recent experience of the United States and the West in addressing environmental issues, however, means that Eastern and Central European nations can draw from the successful environmental technologies and policy frameworks developed by others and not have to create their own from scratch. Taking a page from the experience of Japan, Eastern and Central Europe–through a policy of adaptation–could achieve substantial economic and environmental progress at a rapid pace, providing that the burdens of their recent past do not create a roadblock to reform and that the public's desire for immediate economic progress does not cause the reforming countries to lose patience.

The pace of change, moreover, could be accelerated by the countries' own scientific and technical skills. For example, Polish scientists have conducted extensive studies on the impact of air pollution on forests, and Czech scientists have done considerable work on integrated pest management to control the damage inflicted by insects on crops and livestock without significant use of pesticides. This experience, applied in a new economic and political setting, could lead to environmental improvements without the intervention of foreign expertise. It also suggests that academic and scientific exchanges between the East and West will be beneficial to both regions. In this emerging era of free exchange, good science and new ideas need not be bound by national borders or political ideologies.

Like the United States in the 1970s, the nations of Eastern and Central Europe also have a weak institutional foundation upon which to build a substantial environmental program. Weaknesses can be found throughout the entire political structure, but are most serious at the subnational level. In the United States 20 years ago, state and regional institutions did not have the resources to pursue vigorous environmental initiatives and had to depend largely on the federal government for direction, expertise, and financing. However, throughout Eastern and Central Europe, the governments' track records of deceit and oppression seriously undermine their credibility. As David A. Hake of the United States pointed out in the symposium, each nation in the region must devise a strategy for addressing its environmental problems, but it is difficult for a nation to forge a strategic plan when "the people desperately fear planning." This is a burden of history that the governments of Eastern and Central Europe will have to carry for some time.

In the post-Communist era, many Eastern and Central European national governments face the additional problem of strong subnational regional and ethnic identification that has led, for example, to calls for independence from Serbians, Slovenians, and Croatians living in Yugoslavia. "We're all supposed to be Yugoslavs," a Yugoslav national recently stated. "But scratch one of us and you'll

find a Serb or Croat or something else. And you don't have to scratch very much." Ethnic and regional antagonisms, of course, exist in the United States, but the issue is not nearly so divisive as it is in parts of Eastern and Central Europe, where it sometimes threatens the unity of the nation state.

It is important to remember that the new federal institutions now being formed in Eastern and Central Europe remain in their earliest stages of development. Officials within these institutions, many of whom come from outside the Communist party, may not have the political experience or skills to set the future course of environmental policies. Thus, unlike the United States during the 1970s, when a strong federal government mapped the route for environmental reform, the new national forces in Eastern and Central Europe will undoubtedly have a more difficult time steering their nations through the difficult political terrain that lies ahead. For the United States, environmental reform has meant regulatory and legislative reform; for Eastern and Central Europe, changes in environmental policies are inseparable from the political and economic revolution that the region is now experiencing.

Step By Step

Despite these obstacles (and in some measure because of them), Eastern and Central European nations–like the United States in the 1970s–must first legislate national standards and then establish federal environmental agencies to oversee the progress of each nation's environmental policies and programs. In line with this concern, many of the tour participants expressed a persistent interest in the provisions and purposes of the National Environmental Protection Act, the Clean Air and Water acts, and U.S. federal laws for managing the nation's hazardous wastes (including the Resource Conservation and Recovery Act; the Comprehensive Environmental Response, Compensation, and Recovery Act; and the Superfund Amendments and Reauthorization Act). They were also interested in the responsibilities and influence of the Environmental Protection Agency, an organization that carries the dual responsibilities of scientific research and policy administration. Whether the Eastern and Central European nations establish a similar umbrella environmental organization or decide to split these responsibilities into two separate agencies remains an open question. In fact, some American speakers, particularly John Mahoney and Patricia Irving, who had studied and participated in the acid rain policy debate in the United States, suggest that a separation of research and policy functions might be an option that the U.S. Congress would be wise to consider. Such a division, they say, might give the research results of a federal environmental agency additional clout because critics would find it more difficult to contend that the research had been tainted by political considerations.

Most tour participants agreed that once the laws and regulations are in place, a second order of business for each nation would be to retrain its experts to operate successfully within the new economic and political order. Here, the nations of Eastern and Central Europe enjoyed the advantage of having well-trained scientists whose schooling compares favorably with their scientific counterparts in the West. The work of these scientists, however, has suffered from government secrecy and deceit as well as from outdated equipment, all of which has undermined the quality of their applied research and thus their potential contributions to society.

As for the region's economists and political scientists, they must be re-educated to a great extent because their theories and ideas must now be entirely rebuilt upon a new political and social framework. The contribution of these disciplines will be crucial to the success of environmental policies in Eastern and Central Europe. As the United States has discovered, environmental problems cannot be solved solely through laboratory tests and demonstrations; successful policies require the application of sound economic principles as well as an understanding of public attitudes and values.

Western technical assistance–both in the physical and social sciences–could be crucial in overcoming the deficiencies that Eastern and Central Europe face in developing an effective environmental system for administration, research, and data collection. The tour itself was a

reflection of America's deep interest in helping the emerging European democracies learn from the U.S. experience; the Alliance of Universities for Democracy is a concrete illustration of the commitment of American universities to establish strong communication links and exchanges with their fellow scholars and researchers in Eastern and Central Europe. So, too, is U.S. involvement in the creation of the Budapest Environmental Center, which should prove instrumental in improving environmental monitoring within the region. Still another example of America's interest in Europe's newly emerging democracies is the National Research Council's ongoing efforts to establish a series of East-West scientific workshops in areas of mutual interest–for example, ecology, agricultural development, and acid rain.

U.S. experts are eager to share their experiences so that Eastern and Central European experts may anticipate problems and avoid some of the mistakes that the United States has made during the past two decades. U.S. officials, for example, have learned that the public and scientific experts often disagree on the nature and extent of the risks that society faces. The public tends to dread hazards that have the potential to cause a catastrophic event–even if the likelihood of such an event is remote (for example, a nuclear accident). Scientists, on the other hand, place more weight on hazards that are subtle but cumulative and could adversely affect a significant portion of the population over the long term (for example, radon gas). In the United States today, it would be impossible to convince the public that radon–a naturally occurring gas that is invisible and odorless–poses a greater threat to the nation's environment and health than nuclear power, even if scientific risk analyses were to show this assessment to be true.

Beyond the fear factor that often drives American environmental policies, U.S. officials lament the fact that the American public and scientific experts rank specific environmental concerns in an entirely opposite order of significance. In poll after poll, the public cites solid, hazardous, and medical waste and ground water contamination as the nation's most pressing environmental problems. Yet, series after series of risk assessments conducted by scientific experts indicate that these problems are not nearly so significant as those related to air pollution–whether the issue is ozone, toxics, or climate change.

Daniel Beardsley, Paul Portney, Milton Russell, and other American symposium participants contend that this dichotomy between public and expert perceptions may be the most critical environmental issue confronting the United States today. What is at stake is not only the misallocation of valuable human and financial resources, but also an inability to address the most critical environmental problems that the nation faces. Or, as John Anderson of *The Washington Post* succinctly puts it, "The most serious mistake" in the development of environmental policies "may be what you take seriously."

Most U.S. officials who participated in the tour and symposium expressed the hope that Eastern and Central Europe, given its culture's long-standing deference for the value of education, would not be as susceptible to this division between expert and public perceptions–a division that in the United States sometimes leads to an inefficient allocation of resources and misguided environmental policies. As Paul Portney suggests, "Environmental officials must give the public confidence that they understand their fears but at the same time educate the public as to what things they ought to be worried about." In short, Portney believes that environmental officials–whether from the East or West–must be "skillful managers" in order to be equally useful to public officials who work in economic development, social services, or education.

Despite the cultural differences, most U.S. officials suggest that the same troubling differences between expert and non-expert opinion would soon take hold in Eastern and Central Europe as an unavoidable consequence of the democratic impulses now rippling across the region. To counteract these trends, American officials urge their European counterparts to develop an effective program for citizen education, an aspect of public policy that has been shortchanged in the United States. Stanley Laskowski of EPA, for example, expresses the hope that both Americans and Europeans could develop and expand programs to increase the "environmental literacy" of their citizens. Such programs, he says, are not only essential to the democratic process, but they also have proven to be enormously "cost effective."

U.S. officials also predict that their Eastern and Central European counterparts will quickly come to recognize the important role of the press in shaping a nation's environmental agenda. Tour participant Willi Rolf Weiher of East Germany is an example of European officials who already view the press as a powerful ally in their efforts to make the environment a prime issue. He was eager to inform the Western press of the environmental and human health problems afflicting his fellow citizens living near the heavily industrialized region of Bitterfeld. Weiher was interviewed and quoted by members of the national press, including a reporter from *The Washington Times* and a broadcast journalist from the television news program, *20/20*.

As the American speakers suggest, the press is instrumental in informing the public about environmental issues. Through its efforts to translate scientific matters to the public, reporters help to frame the nation's environmental debate and ultimately its agenda. However, contrary to government, industry, and environmental critics, the American press–although prone to emphasize bad news and ignore good news–has neither led the charge nor stood at the gate in trying to advance or impede environmental reform.

As John Anderson comments, the press corps in the United States, for the most part, has reflected the conflicting sentiments that American society has displayed about the environment. Everyone wants a clean environment, but no one wants to spend excessive amounts of money to achieve that goal, especially if the expenditures mean less money for economic development, education, and health-care programs. Moreover, as Anderson points out, the problems that the press faces in trying to inform the public have often been compounded by a lack of consensus among scientific experts–for example, over the environmental threat posed by global warming or the ecological dangers posed by acid rain. If the press and public is sometimes con-

fused about an environmental matter, it could be a reflection of the confused state of scientific knowledge concerning that issue.

In oppressed societies, such as those that existed in Eastern and Central Europe, the problem has been unreliable or inadequate information; in democratic societies, on the other hand, the free flow of information and opinion has sometimes been overwhelming, especially for issues tainted by insufficient data and/or strongly held opposing views. As several U.S. speakers suggest, in the United States there is often too much, not too little, information–a factor that makes consensus difficult to achieve, especially when some of the information is sensationalized in an effort to advance a particular agenda.

Even with their limitations, education and public information are nevertheless prerequisites for effective environmental decision-making. Such prerequisites do not guarantee successful environmental policies; the United States, for its part, has made and continues to make plenty of mistakes when it comes to the environment. However, as the recent experience in Eastern and Central Europe shows, a controlled press and ill-informed public is a prescription for disaster.

Laws, regulations, education, and information all are important building blocks for successful environmental policies. Success, however, also depends on money. The U.S. Environmental Protection Agency estimates that the United States spends about $90 billion each year to comply with federal environmental regulations–about 1.5 percent of its gross national product. The agency also estimates that implementation of the Clean Air Act amendments, now under consideration by the U.S. Congress, will add another $30 billion to the costs of compliance during the next 10 to 15 years.

With an annual gross national product exceeding $4 trillion, the United States can afford a $100-billion investment to comply with federal environmental regulations. In fact, although industry spokespeople have complained that the expenditure is too high and environmental advocates have lamented that it is too low, there is widespread agreement that the laws are necessary and that the expense–although subject to fluctuations–is both acceptable and destined to rise in the future.

But what about nations that are not as wealthy as the United States–nations such as those in Eastern and Central Europe? Where will they find the money to address their environmental problems? And how much of an environmental burden can they place on their fledgling capitalist economies, which are not yet fully established or functioning? On this issue, the Americans and Eastern and Central European tour participants express different opinions about the appropriate strategy. The Europeans often speak of the need for outside financial assistance; the Americans often counter that substantial aid from the West is not likely to occur.

The American assessment was strengthened by recent events in the Middle East. With oil supplies at risk and prices sharply rising, the economies of the Western industrialized nations felt the pinch and slipped into a mild recession. Thus the prospects for direct aid to address Eastern and Central Europe's environmental problems darkened even more. And an eco-Marshall plan, which seemed unlikely early last summer, is even more unlikely today.

These factors place the prospects for success in transforming Eastern and Central European societies squarely in the hands of the Europeans themselves, which is where it should be. Such factors also make university exchanges such as last summer's environmental tour sponsored by the United States Information Agency Office of Citizen Exchanges, as well as the newly formed Alliance of Universities for Democracy, critical elements in the development of successful domestic and regional environmental programs. These exchanges allow Eastern and Central Europeans to learn from the experience of others, provide an introduction to Western technology, and lead to valuable personal contacts that are likely to serve as the foundation of a long-lasting international network based on mutual interests and concerns.

Through these exchanges, U.S. academics, administrators, and public officials, in turn, can learn firsthand about the rich cultural heritage of Eastern and Central Europe and can examine the wealth of basic scientific research that has taken place within the region during the past 45 years. The relationship is likely to serve each party well; it certainly provides an opportunity to increase the harmony and well-being between East and West.

In this era of radical change and unprecedented opportunity, trans-Atlantic Euro-American programs could serve no higher purpose. For this reason, both the European and American participants at the conclusion of the two-day symposium in Annapolis expressed sincere hope that the tour and symposium would not mark the end of the discussion but simply the beginning of a dialogue that would continue without interruption in the months and years ahead.

Fedor Cerne expressed this sentiment well when he compared the value of the international exchange to a regimen of jogging to improve one's health. "It is easier," he said, "to continue running in a group than alone. Being with others will make the environmental marathon easier to accomplish."

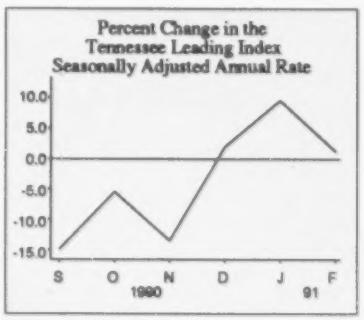
It was in this spirit of mutual cooperation and support that the 16-day tour and symposium ended. The long, continuous journey for a healthy environment and prosperous economy will have additional support from the newly-formed Alliance of Universities for Democracy, whose charter was signed in Budapest in November 1990 by American and European representatives from 41 charter member universities. ■

TENNESSEE ECONOMIC OVERVIEW

(February Index as of April 18, 1991)

The Tennessee index of leading economic indicators rose in February at a seasonally adjusted annual rate (SAAR) of nearly 1 percent. This constitutes the third consecutive monthly increase in the index, which provides an indication of the strength of the state's economy six to nine months ahead. While the gain in the index was relatively meager, it is significant to note that three seasonally adjusted components of the index displayed marked increases in February, including the U.S. index of leading indicators. The U.S. index posted its first gain since last June, rising by a healthy 13.75 percent (SAAR). This may be an initial sign of improvement in the national economy, which is the most critical ingredient to a strong recovery in Tennessee. Total Tennessee construction starts and inflation-adjusted taxable sales also registered strong increases from January to February, even though taxable sales have fallen 10.4 percent over the past year. On the downside, weakness in initial claims for Tennessee unemployment insurance and inflation-adjusted taxable mortgages nearly offset the gains made by the other components of the index. Initial unemployment insurance claims rose very sharply in February to a level of over 45,000 new claims. This follows substantial improvement over the course of the previous three months, in which new claims fell from 56,000 in October to 35,000 in January.

While both the Tennessee and U.S. leading indicators are providing evidence that a recovery may begin by late summer, the recovery clearly has not yet begun at either

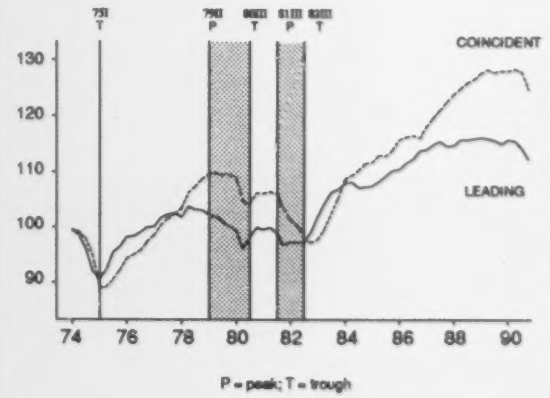


the state or national levels. The Tennessee coincident index fell in February at a seasonally adjusted annual rate of 12.6 percent, a result of declines in all three seasonally adjusted components which constitute the index. The U.S. coincident index fell by 7.3 percent (SAAR), the eighth consecutive monthly decline in the national index. Tennessee commercial and industrial electrical consumption also decreased in February, as did the Memphis help-wanted index, which fell from its January level of 104 to 97. The latest decline marks the first time the help-wanted index has fallen below 100 since 1985.

Tennessee labor markets show little sign of an upturn. After consistently rising over the previous five months, the state's unemployment rate fell slightly in February to 6.5 percent, down from 6.6 percent in January. However, Tennessee nonagricultural employment and total manufacturing employment fell 6.5 percent and 9.4 percent (SAAR), respectively, in February. This compares with an increase in the U.S. unemployment rate to 6.5 percent and a less precipitous 3.1 percent (SAAR) decrease in U.S. nonagricultural employment.

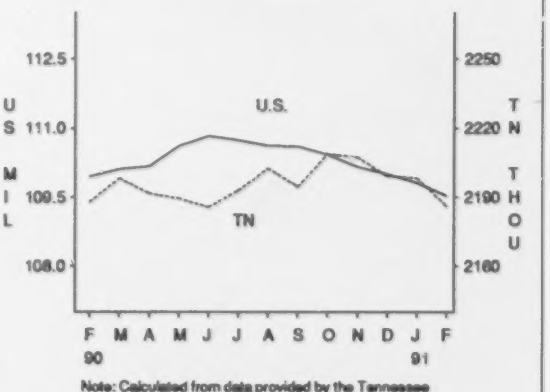
It is important to note that February was still a month of war in the Persian Gulf, so none of the hard economic data reported to date has reflected post-war economic activity or sentiment. Next month will provide the first glimpse of how the economy is responding to peace, and if the positive leading signals of February continue into March, then substantial evidence will be suggesting a recovery by late summer.

FIGURE 1
Coincident and Leading Indexes



P = peak; T = trough

FIGURE 2
Total Nonagricultural Employment
Seasonally Adjusted



Note: Calculated from data provided by the Tennessee Department of Employment Security.

Center for Business and Economic Research, College of Business Administration, The University of Tennessee, Knoxville. For further information, call CBER (615) 974-5441. Data reported herein are seasonally adjusted, and therefore may not be directly comparable to data reported elsewhere.

TENNESSEE ECONOMIC INDICATORS

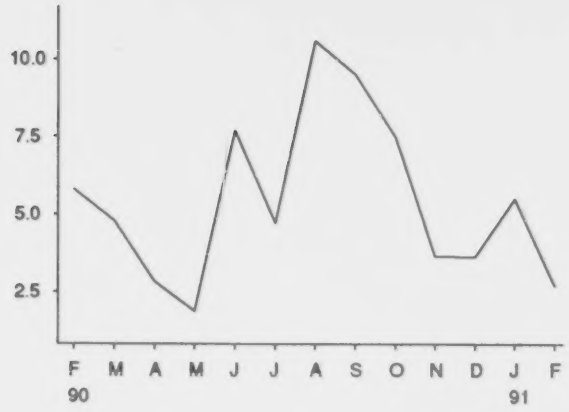
Seasonally Adjusted

	2/90	3/90	4/90	5/90	6/90	7/90	8/90	9/90	10/90	11/90	12/90	1/91	2/91	1988	1989	1990
US Personal Income (BIL 82 $) (1)	3558.2	3570.1	3569.4	3576.9	3569.8	3572.9	3552.4	3542.8	3520.2	3524.8	3534.5	3504.7	3505.5	3438.8	3534.7	3553.7
% Chg Prev Month SAAR	2.15	4.09	-0.24	2.57	-2.38	1.07	-6.68	-3.19	-7.41	1.60	3.35	-9.67	0.28	3.84	2.79	0.54
% Chg Same Month Last Yr	0.82	0.64	0.88	1.64	1.32	1.14	0.63	0.30	-0.60	-0.72	-0.65	-1.33	-1.48	3.84	2.79	0.54
US CPI,All Urban Consumers (1982-84=100)	128.2	128.7	129.0	129.2	130.0	130.5	131.6	132.6	133.4	133.8	134.2	134.8	135.1	118.4	124.0	130.7
% Chg Prev Month SAAR	5.79	4.78	2.83	1.88	7.69	4.71	10.60	9.51	7.48	3.66	3.65	5.50	2.70	4.09	4.79	5.40
% Chg Same Month Last Yr	5.17	5.15	4.71	4.36	4.75	4.82	5.62	6.16	6.38	6.27	6.17	5.64	5.38	4.09	4.79	5.40
TN Manag Employment (THOU) (2)	2187.9	2198.4	2191.7	2189.5	2185.8	2193.0	2202.7	2194.7	2208.9	2207.5	2199.3	2198.4	2186.1	2092.2	2167.4	2195.5
% Chg Prev Month SAAR	0.54	5.88	-3.59	-1.17	-2.02	4.01	5.42	-4.26	8.06	-0.77	-4.37	-0.49	-6.50	3.98	3.60	1.30
% Chg Same Month Last Yr	2.18	2.07	1.76	1.81	1.40	1.58	1.01	0.41	0.75	0.31	0.07	0.52	-0.08	3.98	3.60	1.30
US Manag Employment (MIL)	110.0	110.1	110.2	110.6	110.8	110.7	110.6	110.6	110.4	110.2	110.0	109.8	109.5	105.5	108.4	110.3
% Chg Prev Month SAAR	3.38	1.80	0.60	4.90	2.32	-0.96	-1.37	-0.01	-1.94	-2.86	-1.74	-2.06	-3.13	3.27	2.73	1.76
% Chg Same Month Last Yr	2.15	2.14	2.03	2.30	2.27	2.07	1.83	1.60	1.33	0.84	0.57	0.15	-0.40	3.27	2.73	1.76
TN Unemployment Rate (%) (2)	5.1	5.0	5.0	4.9	4.9	5.1	5.1	5.3	5.5	5.6	6.2	6.6	6.5	5.8	5.1	5.2
US Unemployment Rate (%)	5.3	5.3	5.4	5.3	5.3	5.5	5.6	5.7	5.7	5.9	6.1	6.2	6.5	5.5	5.3	5.5
Bank Prime Interest Rate (%)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	9.5	9.0	9.3	10.9	10.0
US Coincident Composite Index (1982=100)	133.8	134.2	133.7	134.4	134.9	134.6	134.4	133.3	131.8	130.4	129.3	127.4	126.6	130.0	133.5	133.1
% Chg Prev Month SAAR	10.41	3.65	-4.38	6.47	4.56	-2.64	-1.77	-9.39	-12.70	-12.03	-9.67	-16.28	-7.28	5.19	2.71	-0.27
% Chg Same Month Last Yr	0.38	0.60	-0.30	0.75	1.12	1.20	0.30	-0.30	-0.98	-2.25	-3.36	-3.99	-5.38	5.19	2.71	-0.27
US Leading Composite Index (1982=100)	144.1	145.4	145.2	146.0	146.2	146.2	144.4	143.2	141.5	139.9	139.7	139.0	140.5	142.7	144.9	143.9
% Chg Prev Month SAAR	-10.22	11.38	-1.64	6.82	1.66	0.00	-13.81	-9.53	-13.35	-12.76	-1.70	-5.85	13.75	1.90	1.54	-0.67
% Chg Same Month Last Yr	-1.03	0.41	-0.34	1.11	1.39	1.46	-0.35	-1.17	-2.01	-3.25	-3.85	-4.40	-2.50	1.90	1.54	-0.67
TN Coincident Composite Index (1/74=100)	134.1	135.5	135.8	135.2	135.7	136.2	134.9	133.7	133.0	130.2	129.7	127.7	126.3	131.8	135.1	134.2
% Chg Prev Month SAAR	-15.20	13.06	3.21	-5.37	4.18	5.12	-11.45	-9.66	-6.34	-22.44	-4.51	-16.89	-12.59	4.92	2.50	-0.66
% Chg Same Month Last Yr	-0.26	0.38	-0.47	0.08	0.53	1.62	-0.27	-1.15	-1.68	-3.42	-4.25	-6.03	-5.79	4.92	2.50	-0.66
TN Leading Composite Index (1/74=100)	119.8	119.1	119.2	119.3	119.9	118.9	117.8	116.5	116.1	115.0	115.1	115.8	115.9	119.5	119.6	118.1
% Chg Prev Month SAAR	-3.31	-6.70	0.59	0.80	6.29	-9.90	-10.57	-11.92	-4.34	-10.83	1.58	7.67	0.99	0.86	0.16	-1.31
% Chg Same Month Last Yr	-0.40	-0.80	-1.50	-0.32	0.49	0.19	-1.83	-2.92	-2.09	-3.68	-2.88	-3.60	-3.25	0.86	0.16	-1.31
TN Comm & Ind Elect Consumption (MIL KWH) (3)	2289	2333	2367	2359	2369	2471	2377	2452	2440	2350	2330	2370	2356	26788	27779	28627
% Chg Prev Month SAAR	-63.96	25.82	18.91	-4.11	5.42	65.51	-37.14	45.34	-5.81	-36.18	-9.73	22.23	-6.55	6.64	3.70	3.05
% Chg Same Month Last Yr	-0.62	0.76	2.10	2.93	2.31	8.43	2.71	5.63	4.91	-0.52	-1.81	-4.91	2.95	6.64	3.70	3.05
Help Wanted Index,Memphis (1967=100) (4)	131	139	144	131	131	129	125	114	119	109	114	104	97	144	143	127
% Chg Prev Month SAAR	-54.95	103.67	52.82	-67.87	0.00	-16.86	-31.48	-66.89	67.38	-65.12	71.29	-66.77	-56.66	0.93	-0.87	-10.92
% Chg Same Month Last Yr	-5.07	-2.11	-7.10	-10.88	-7.75	-7.19	-10.71	-20.28	-19.59	-19.26	-17.39	-25.71	-25.95	0.93	-0.87	-10.92
TN Mfg Employment (THOU) (2)	526.3	526.3	523.6	522.4	520.7	523.0	525.6	520.1	522.9	520.8	518.7	516.9	512.7	511.9	524.6	522.7
% Chg Prev Month SAAR	-0.02	4.57	-5.85	-2.80	-3.78	5.30	5.64	-11.43	6.75	-4.79	-4.71	-4.01	-9.43	2.88	2.48	-0.36
% Chg Same Month Last Yr	0.85	0.68	0.04	0.09	-0.63	-0.43	-0.63	-1.19	-0.95	-1.47	-1.67	-1.41	-2.22	2.88	2.48	-0.36
US Mfg Employment (MIL)	19.2	19.2	19.2	19.2	19.1	19.1	19.1	19.0	19.0	18.7	18.7	18.6	18.5	19.4	19.4	19.1
% Chg Prev Month SAAR	4.67	-1.67	-1.67	-1.43	-1.18	-1.06	-2.91	-4.01	-4.21	-12.35	-3.22	-4.89	-9.19	1.73	0.39	-1.87
% Chg Same Month Last Yr	-1.33	-1.47	-1.53	-1.60	-1.57	-1.58	-1.78	-1.81	-1.98	-2.91	-3.06	-2.90	-4.04	1.73	0.39	-1.87
TN Mfg Avg Weekly Hours (2)	38.3	38.4	38.2	38.5	38.5	39.0	39.0	38.7	38.5	38.8	39.1	39.3	39.5	41.6	40.8	38.6
% Chg Prev Month SAAR	-11.42	2.36	-7.97	10.20	0.45	17.84	-1.50	-8.93	-3.70	9.36	8.05	8.47	4.45	0.04	-1.86	-5.36
% Chg Same Month Last Yr	-7.59	-7.25	-8.48	-5.83	-6.32	-4.22	-5.08	-5.91	-4.94	-2.93	-0.66	1.57	2.97	0.04	-1.86	-5.36
TN Taxable Sales (MIL $) (5)	3828	3602	3659	3542	3597	3631	3512	3466	3528	3602	3530	3532	3614	39836	41400	43118
% Chg Prev Month SAAR	93.45	-51.86	20.71	-32.31	20.39	11.89	-32.90	-14.71	23.83	28.26	-21.37	0.52	31.66	5.97	3.93	4.15
% Chg Same Month Last Yr	13.99	2.96	7.09	2.32	4.58	5.22	0.15	-1.06	3.17	3.71	0.99	-2.52	-5.59	5.97	3.93	4.15
TN Taxable Sales (MIL 82 $) (5)	2986	2799	2836	2741	2767	2782	2669	2614	2645	2692	2631	2620	2675	33656	33380	33000
% Chg Prev Month SAAR	82.86	-54.05	17.38	-33.55	11.80	6.85	-39.33	-22.12	15.21	23.73	-24.13	-4.72	28.20	1.83	-0.82	-1.14
% Chg Same Month Last Yr	8.39	-2.08	2.28	-1.96	-0.17	0.39	-5.17	-6.80	-3.02	-2.42	-6.88	-7.72	-10.42	1.83	-0.82	-1.14
Initial Claims for TN UI (THOU) (2)	41.6	43.0	45.2	46.7	34.8	45.5	46.8	49.7	56.6	56.5	50.6	35.0	45.4	416.1	464.5	561.0
% Chg Prev Month SAAR	-47.9	48.7	80.5	48.3	-97.0	2370.5	40.7	105.4	379.4	-2.6	-74.7	-98.7	2185.3	-5.2	11.6	20.8
% Chg Same Month Last Yr	17.36	21.85	42.35	19.57	-14.54	8.93	9.49	28.66	40.28	41.80	16.74	-20.37	9.12	-5.22	11.62	20.77
Continued Weeks Claimed For TN UI (THOU) (2)	198.8	192.0	221.0	227.2	209.8	227.7	217.9	217.2	260.3	255.8	257.3	267.2	278.6	2064.4	2173.6	2696.7
% Chg Prev Month SAAR	-53.3	-33.9	438.6	39.7	-61.7	167.6	-40.9	-4.1	778.3	-18.9	7.4	57.3	65.3	0.1	5.3	24.1
% Chg Same Month Last Yr	18.09	9.67	34.52	27.50	17.64	30.38	11.12	20.57	34.72	25.94	34.72	26.16	40.16	0.07	5.29	24.07
Total TN Construction Starts (6)	418.7	411.8	451.5	461.2	416.6	392.3	385.3	388.1	445.7	341.0	419.1	391.8	407.9	5284.4	5326.0	4980.4
% Chg Prev Month SAAR	-56.8	-17.9	201.7	29.0	-70.5	-51.4	-19.3	9.1	425.4	-96.0	1088.3	-55.5	62.2	-1.0	0.8	-6.5
% Chg Same Month Last Yr	-11.68	-1.48	-14.63	8.81	-6.18	-7.07	-18.44	-17.62	6.82	-20.25	10.06	-12.74	-2.57	-0.99	0.79	-6.49
Value Of TN Constrc Starts (MIL 82 $,NSA) (6)	229	283	268	306	378	240	342	266	343	181	240	170	196	4240	4053	3343
% Chg Prev Month SAAR	-84.8	1177.7	-46.4	383.0	1164.6	-99.6	7003.3	-95.1	1999.4	-100.0	2757.3	-98.4	473.1	-5.7	-4.4	-17.5
% Chg Same Month Last Yr	-0.90	0.23	-28.45	-22.39	-6.21	-18.66	-21.42	-45.71	17.83	-33.94	-21.14	-36.54	-14.13	-5.70	-4.40	-17.51

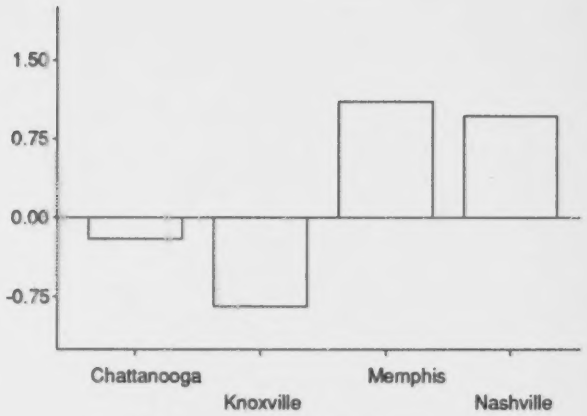
	87/IV	88/I	88/II	88/III	88/IV	89/I	89/II	89/III	89/IV	90/I	90/II	90/III	90/IV	1988	1989	1990
US GNP (BIL 82 $) (1)	3920.7	3970.2	4005.8	4032.1	4059.3	4095.7	4112.2	4129.7	4133.2	4150.6	4155.1	4170.0	4153.4	4016.9	4117.7	4157.3
% Chg Prev Qtr SAAR	6.56	5.15	3.64	2.65	2.73	3.64	1.62	1.71	0.34	1.69	0.43	1.44	-1.58	4.46	2.51	0.96
% Chg Same Qtr Last Yr	5.01	5.00	4.86	4.49	3.54	3.16	2.66	2.42	1.82	1.34	1.04	0.98	0.49	4.46	2.51	0.96
TN Personal Income (MIL $) (1)	65099	65891	67551	68754	70010	71334	72213	72950	73850	75558	76144	77255	NA	68052	72587	NA
% Chg Prev Qtr SAAR	14.71	4.96	10.46	7.32	7.51	7.78	5.02	4.15	5.03	9.58	3.16	5.97	NA	8.53	6.66	NA
% Chg Same Qtr Last Yr	9.86	7.98	9.31	9.30	7.54	8.26	6.90	6.10	5.48	5.92	5.44	5.90	NA	8.53	6.66	NA
TN Personal Income (MIL 82 $) (1)	53579	53921	54697	55047	55432	55773	55763	56029	56032	56387	56320	56391	NA	54774	55899	NA
% Chg Prev Qtr SAAR	10.25	2.57	5.89	2.58	2.82	2.49	-0.07	1.92	0.02	2.56	-0.47	0.51	NA	4.49	2.05	NA
% Chg Same Qtr Last Yr	4.71	3.92	5.33	5.28	3.46	3.44	1.95	1.78	1.08	1.10	1.00	0.64	NA	4.49	2.05	NA

1. Annual Rate.
2. Calculated from data provided by the Tennessee Department of Employment Security.
3. Source: Tennessee Valley Authority.
4. Source: The Conference Board.
5. Calculated from sales tax collections, provided by the Tennessee Department of Revenue.
6. Source: F.W. Dodge Division of McGraw-Hill Information Services Company.

Percent Change in the U.S.
Consumer Price Index
Seasonally Adjusted Annual Rate

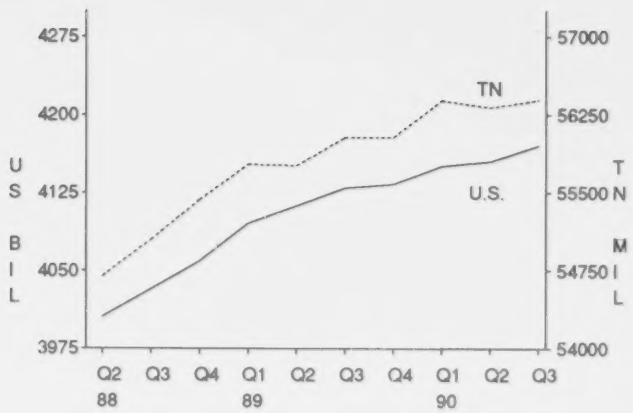


MSA Nonagricultural Employment Growth
February 1990 - February 1991

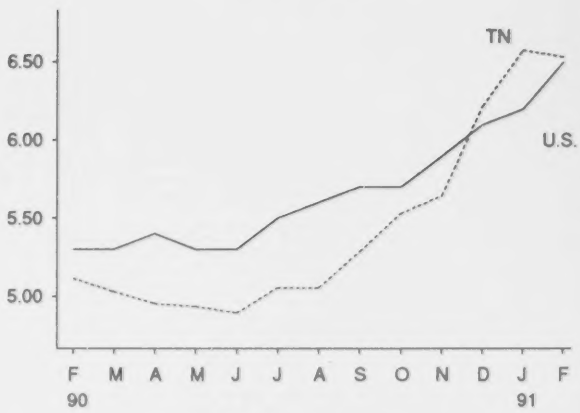


Note: Calculated from data provided by the Tennessee Department of Employment Security.

Real Personal Income
Seasonally Adjusted Annual Rate
1982 Dollars



Civilian Unemployment Rates
Seasonally Adjusted



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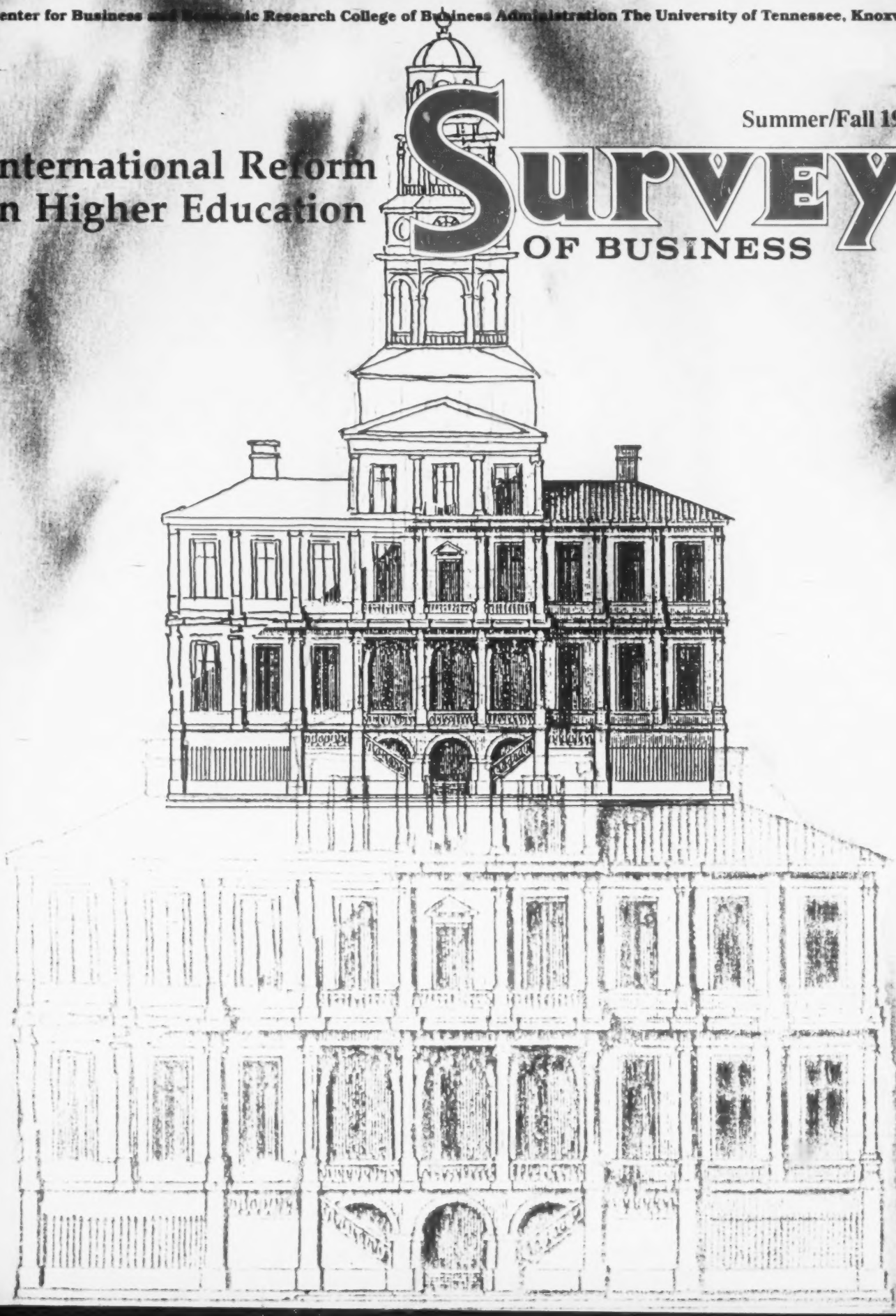
Summer/Fall 1991

International Reform In Higher Education

Survey OF BUSINESS



Survey
OF BUSINESS

COMMENTS

C. Warren Neel, Dean
College of Business Administration

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One of the basic principles engendered in the structure of the Charter of the Alliance of Universities for Democracy is that higher education is an essential element for social reform and economic progress. With the fall of the Berlin Wall and the ensuing democratization of Central and Eastern European (CEE) countries, educators in both the U.S. and CEE have come to realize that the university must play an integral role in the building of democratic institutions and economic development. The involvement includes technology transfer, decentralized decision-making, human health, the sustainable habitation of the earth, and common moral and social values.

In examining the needs of the post-communist countries, American educators have used the opportunity to take a closer look at their own institutions to see where they have succeeded and where they have failed and how they might also make American universities more productive in an increasingly global society.

When representatives of 43 universities in 6 countries came together last November in Budapest, the Charter Conference of the Alliance became a forum of ideas for improving higher education across the globe. In this issue of the *Survey*, we present a sample of the speeches made at the conference. The speakers address the role of higher education in a variety of ways, from ex-senator Brock's "global perspective on critical issues facing humankind" to economic and environmental policy issues and the role of higher education in both the United States and in Central and Eastern Europe. The brief introductory remarks by Lamar Alexander and the keynote speech by William E. Brock, III, are printed in their entirety. Other speeches are condensed because of space constraints.

The last article, "Setting Environmental Priorities in Re-emerging Countries," by Jeanne McDonald, was compiled from interviews with representatives from Eastern Europe who took part in an environmental tour and symposium in the United States last year. Many of those participating helped draft the constitution of the Alliance with an aim to promote international partnership between students, faculty, and administrators in higher education.

We welcome the opportunity to share these ideas and reflections with our readers. With our shrinking globe and our common economic and environmental concerns, foreigners have become our brothers and sisters, all participating in a common cause–to enrich our institutional infrastructures and build a better universe not only for today's citizens but for the children of future generations.

David A. Hake

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David A. Hake is director of the Center for Business and Economic Research and the East European Center, The University of Tennessee, and editor, *Survey of Business*.

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Opening Remarks: Charter Conference of the Alliance of Universities for Democracy

by Lamar Alexander

In March of 1990, all of us who lived in Knoxville, Tennessee were struck by the arrival in our community of six university rectors from five eastern European countries. What especially struck us was that they all had been invited in the summer of 1989, but by the time they had arrived at The University of Tennessee, their world had changed.

As a result of that month's visit it became obvious to members of universities–both in the countries of Eastern Europe and in the United States–how much we might learn from each other. A result of this tour, and a second tour of Eastern and Central European environmental officials, was the Alliance of Universities for Democracy. This ceremony today marks the charter conference for that Alliance. It is an exciting day for us because the Alliance is founded for the purpose of encouraging and promoting democratic institutions–and we on both sides of the ocean have a lot to learn about that. In Eastern Europe it is more a time of beginning and building some new democratic institutions. In the United States, it is a time for a renewal of existing democratic institutions and understanding and strengthening them. We hope that the Alliance forms an important basis for encouraging and promoting democratic institutions.

We are in the midst of change. There are symbols of it everywhere. The name of this university has changed, but the statue of Karl Marx in the back of the room is still here. The star has come down from the top of the parliament building in Budapest, but the weather vane that will replace it has not gone back up yet. The street signs say it to a visitor. There are two signs for most streets in Budapest. For example, there is the People's Republic Street with a mark through it, and then another sign that says Andrassy Ut. I understand that those two signs will stay up for that one street for as long as two years because it will take a while for people to become accustomed to the change; it will take a while to develop new telephone books; it will take a while to create new maps; it will take a while to develop new ways of thinking. So maybe what we are about today is that our universities are perhaps the best institutions to help us have the patience to develop the new maps, the new telephone books, the new ways of thinking that will be necessary to promote and encourage democratic institutions.■

Lamar Alexander, Secretary of the U.S. Department of Education, was the president of The University of Tennessee when he gave these remarks at the Charter Conference of the Alliance of Universities for Democracy last year in Budapest.

Democracy and the Role of Universities

by William E. Brock, III

About eight years ago, I helped to found and form the National Endowment for Democracy (NED), which I have the privilege of chairing in the United States. At the time the NED was founded, those of us who talked to President Reagan and to the members of Congress . . . described the need for our country to provide assistance to people in other lands that were still trying to acquire freedom.

[We needed] assistance in the formulation and formation of what we called mediating institutions—those institutions, which by their existence, help to define democracy: free press, free labor movement, free business associations, free political parties, free academic institutions, free social institutions, free religions, and so on.

During these past eight years, our endowment has been active in Argentina, Chile, Panama, Afghanistan, the Philippines, South Africa, Hungary, Czechoslovakia, Poland, China, and the Soviet Union. And as active as we have been in the course of these eight years of trying to help, none of us predicted the magnitude or the rapidity of the collapse of totalitarianism and socialism that has occurred in the last two years. Basically, the reasons are many. Perhaps most fundamentally, there is among people everywhere a continuing hunger for personal liberty. But this was compounded by the utter incompetence of statism and socialism, and facilitated–perhaps more than we know–by the advent of modern communications technology. For no wall could withstand the onslaught of information pouring out of satellite broadcast television, VCR, FAX machines, and the rest. People had a chance to see what others had, what they were doing with it, and it taught them that they could have it, too. The danger, I think, in all of this, is that television doesn't teach you so much how to do it, it just teaches you to hunger for it.

Economic Progress

Democracy became a symbol for economic progress. I think the danger in that is that democracy is equated with instant

economic progress. The political changes can occur almost overnight. It is awesome, it is pervasive, and it is fundamental. But the anticipation of overnight change in economic well-being cannot be met in a short period of time. There is a differing time scale in the development of a strong economy. While political changes occur in a year or less and then proceed to evolve for generations, economic well-being can take four years, five years, or ten before being deeply rooted in sufficient magnitude to be assured. Universities can help prepare people for that change by education. But even having done that, it will be difficult to pursue the course that must be pursued because the unemployment that comes from the closing of redundant and inefficient state enterprises will be severe. The increase in prices that comes from deregulation of controlled necessities will be painful. But

the fact is that 40 years of monopoly–not central planning, but monopolistic control–have wreaked great havoc, and the progress that is possible for each individual country will vary a great deal, depending of the degree of abusiveness imposed.

Here in Hungary, there has been a movement toward privatization and entrepreneurial activity in very limited forms for 20 years or more. In Czechoslovakia it has yet to begin. The dilemma, I think, is that having achieved our political voice in any country that has merged into democracy, we have to temper that new-found freedom with a sense of restraint, an understanding that it will take time. And that's hard. That's very difficult.

Last February Ivan Havel, brother of Václav Havel, the Czechoslovakian president came to Washington, and I had a very small dinner for him. One of our American businessmen insisted that he give us an answer on what kind of tax policy Czechoslovakia was going to adopt. Mr. Havel finally responded by saying, "I understand your impatience, but you must understand that less than two months ago we were in jail; two *weeks* ago we took the presidency. We don't even know the questions yet, much less the answers. But I would remind you that in the United States after 1776 it took you 13 years to write a constitution, and after you had finished writing the constitution, your first act of Congress was not to write a tax bill but the Bill of Rights. So you see, Mr. Businessman, in Czechoslovakia our first priority is to establish a civil society." I think that answer was wonderfully eloquent and to the point.

The University Role

And it does seem to me that universities such as those present here can play a particularly important role now in this period of transition by maintaining themselves as an intellectual haven within which to maintain that balance, that perspective, that historical sense of context that would allow for a successful and enduring transition. The essential ingredients of that transition would be, first, a coherent representative government–and I say representative, not publicatory–representative, not the rule of the mob, because government is not in place in a democracy to reflect current movement so much as it is to lead it and help shape it through the informed participation of the people; and second, an insistence upon the availability of pluralistic choice and the evolution of strong political parties with different programs so that people have a choice.

I met last year with the Polish Senator Regulski in Warsaw. He was talking about the difficulty of moving from a Stalinist constitution to one in which local government is restored. And he said, "Not only do we have to train in Poland some 300,000 people in local governments, we have to reshape our whole system of governments; we have to give to local governments the power of taxation so that they have the resources with which to serve their communities." It is important that there will be people arguing in those communities between having a tax on the sales of products or a tax on property, or tax on income; because different systems work in different ways. What works for one community may not work for another, and people who are given that choice are empowered by the existence of that party.

The potential danger in the current situation is that where there are countless parties, they are almost irrelevant because of their number. One thing that universities can do is to point out that there are some countries that have proportional representation, and they don't work very well. Israel is a good example of a country that is trying to get away from what others have had to put some minimal rules on. But knowledge of those facts can be important to the stabilization of the transition. The third ingredient is the existence of the rule of law, starting with an overarching set of principles. We call it a constitution in our country. But it must be something that cannot be changed easily and then it must be complemented by a code of law which clearly must be updated regularly to adapt to the changing economic and political circumstances. If we are going to attract investment, there must be stability–stability that comes from overarching principles difficult to change. And the fourth ingredient, with which the founding fathers of my own country wrestled so long and so hard, the Federalist Papers, is the existence of the independent judiciary, without which the rule of law becomes the rule of man. That's the beginning cancer that can destroy freedom. Lastly, it seems to me that universities can do something that is not often discussed, and that is to help create, shape, nurture, and sustain nongovernmental institutions that empower people. They must be autonomous universities, of course, because education is the tool for personal growth. There must be autonomous and pluralistic religious choices, because we have to have the establishment of values in a civil society. There must be a free and unfettered press, free trade unions, free business associations, voluntary social organizations, strong political organizations, and something that is not mentioned very often–but

at least in my own country is fundamental to the existence of small business–small business opportunities.

Entrepreneurship

In this country, and in my own country, we take great pride in the fact that we are entrepreneurial. People can enter small business, fail, get up and dust themselves off and try again, and again, and again, and again, until they succeed. There is something about the existence of that opportunity that creates a citizenship with real roots. There is something about having the right to be your own boss that is essential to the creation of the middle class with an activist bent for political involvement.

All of these mediating institutions are fundamental. I think it is fundamental that they receive the support of universities. And for those communities or countries that have less experience than others, this kind of interchange can help each of us learn from the other. But it is fundamental that nongovernmental mediating institutions exist, because they are essential to a decentralized form of government, to the existence of a civil society, a tolerant society, a liberal society.

The last point I want to make relates to what I think is the largest challenge that people have faced in history. Emerging democracies are entering world politics, as are the older democracies. This is the most radically different period of history that people have ever experienced. We have talked for most of the century in theoretical terms about the existence of a global economy. We are now living in that economy. Business can locate its plant in any country in the world and will do so with great facility. Technology is available no matter where you are. Capital is available. The crucial ingredient in making a decision for the location of facilities will be the quality of the work force, because for the first time we have moved away from the old method of production, which emphasized sweat and muscle. The real value added in world economics today is mental value added. It's the value added that comes from enhancing the productivity of the individual through mental education and training and the enhancement of skills through teamwork.

One other thing that American businesses are having to learn, sometimes painfully, is that the old "Taylor" model of moving faster and faster with more efficient motions of the hand and eye is not good enough unless the United States wants to compete with the world on the basis of low wages rather than high skills.

Facing the Test

The new global economy is going to test every one of our governments, those that have been here for a very long period of time and those that are totally recent, because things are changing so fast in the world, not just in Hungary or Czechoslovakia or Bulgaria or Poland, but everywhere. There is going to be a good deal of instability and turnover, businesses opening, businesses closing, businesses reducing their redundant personnel, adding new faces, adding new jobs.

We've done some studies in the United States that indicate the average child finishing what we call high school will have four to six jobs in his working life and two to three fundamentally different careers. And that does not imply that they are doing this by choice, that they are moving or job-hopping. It simply says that the jobs are changing underneath their feet. As we replace our old way of doing things with new teams, new technologies, the pressure on the Lamar Alexanders of the world and on you to educate our young people to a greater degree of skill, and flexible skills, is going to be enormous.

In the United States, the average age of people going to college is much higher than it was ten years ago because adults are going back to school in order to keep pace. And that's going to be compounded by the changing demographic circumstances that all of us–not as individuals but as countries–are getting older. As our medicine improves and we live longer, as our infant mortality rates go down, our average population age is going to rise, and that is going to put an enormous pressure on our political systems to change and respond. It will put an increasing pressure on the need for security.

Governments then are going to face very difficult choices because so many of the issues that affect government and affect people that live within countries are issues that are external to those countries. The global economy is not under the control of one government and we have yet to develop the global international institutions that can help stabilize that global economy. The environment is obviously not under the control of any one country, and although we have to deal with it individually, we can deal with it more effectively collectively. AIDS, drugs, terrorism, or just world growth are issues that are going to press on governments in very different ways and create a sense on the part of people that their governments are not working very well

because they are not capable of addressing some of those problems within each individual country.

So we have this incredible conflicting trend in the world. There is more nationalism evident in the world today than in any time in my lifetime, perhaps even back to 1914 or 1915 . . . and yet the economy of the world and the issues that governments face–including the environment–are global issues. And people–as they seek the security of a nationalistic response, as they demand of governments nationalistic actions that protect them from this turnover or from that rapid change–people are going to put more and more pressure on government, government is going to be less and less able to act, frustration is going to increase, and I would imagine you are going to see a lot more turnover in free governments. What that leads us to is the need for universities to prepare people for that change, to predict it and to perceive to the extent that it is possible that we are capable of achieving it without the loss of civil society.

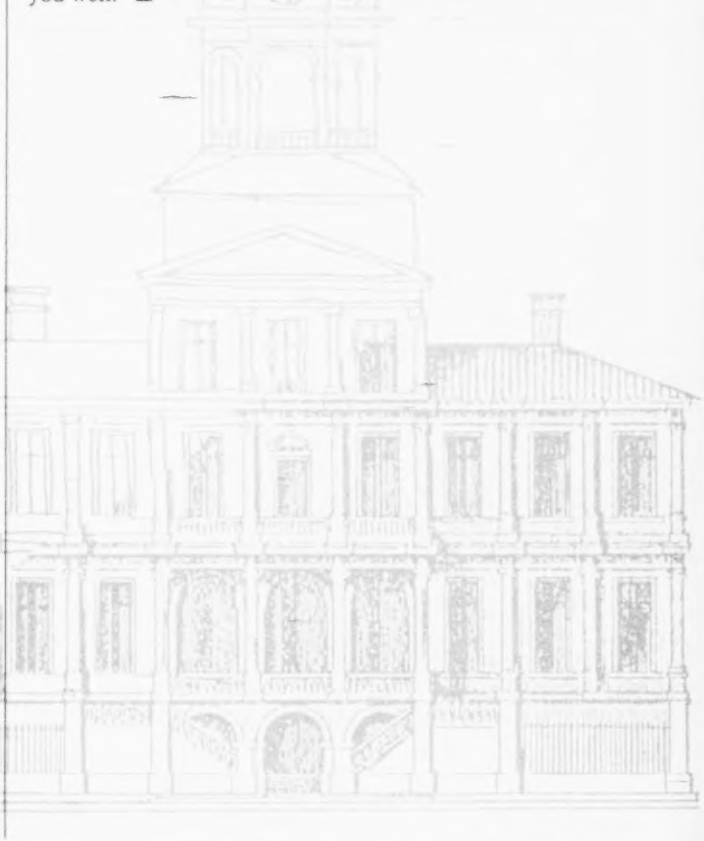
Toward a Better Public Policy

Again, I think, it leads to the existence of this group and the need for a group like this–larger, soon, I hope than it is now–because the network of ideas and the exchange of people that can be generated by an organization like this can help not only the university, but through the university's officers, the countries that we represent can be helped to deal more adequately with these rapidly changing events. The existence of a partnership at the global level can enhance our capacity to act at the national level and meet the need for universities to contribute to the articulation and evolution of better public policy, more effective public policy, a more involving public policy, the kind of public policy that gives sense of empowerment to individual citizens. Those are going to be fundamentally necessary. So, not only will universities have their traditional roles, they will have, I think, a new role, an activist role, a multi-disciplinary role because it is simply impossible to deal with the environment without considering how your actions affect the economy. Economists and environmentalists are simply going to have to learn how to talk to each other–for the first time, in some cases.

Our universities have to be able to look at things in a multi-disciplinary fashion to change–whether new ideals, new technologies, research, or development, and then to help transfer those new ideals, that new technology, out into practical application–in the community, in government, or in business–in order to perpetuate the new knowledge.

Universities that really contribute are going to be universities that, because of these networks, challenge the status quo, challenge the existing dogma, challenge the demagogues, stimulate students to a sense of purpose, self-worth, and confidence, and stimulate communities to economic development or entrepreneurship, technology transfer, and the application of science to new partnerships. Citizens with a sense of self-worth, values and confidence, communities with institutions which empower people, and universities which engender creativity and excitement in the search for truth–these are the components of a civil society, a free people of democracy.

This organization can help you be more effective in pursuing those goals. It can make a contribution to your own individual university, to your country, and to the establishment of a civil society for all of us. That is an important task and I wish you well. ■



Education in the Principles and Practice of Democracy

by C. Warren Neel

Two years ago I was in this country, and I stood in the same hall at the Budapest University of Economic Sciences where the ceremony was held yesterday. I stood in that end of the hall where that famous statue was, and I, like many others, had my picture taken in front of that statue of Karl Marx. I thought about that yesterday, and of all of the social awakening that has taken place since that time. I saw a foreshadowing of it even two years ago. I had been visiting friends in the city and heard them lament about their history and about their concern for the future. Yet, in that building where we were yesterday, there were different kinds of conversation. There were conversations that were more open. There were conversations that were more enlightening. There was a concern for the future of the country and how to get that future back in the hands of the citizenry. I thought then as I do now that there was no more appropriate place for such a discussion to take place than in that institution of higher education.

Inside that building, ideas were supposed to be free. That's the common value and the common tenet. Debate should be open. Here, one man's dogma meets another man's tempering spirit. That, after all, is what it is all about. The agenda rightly should be made there. And that is what I personally have as a hope for this conference–that the seed can be planted so that those agendas can take place not just in the halls of your academic institutions, but within the compounds of this assembly. Twenty-four short months have passed since I was first here, and other events have occurred–startling events–and they have been replicated throughout other institutions and many of the countries that are represented here today. There have been different geographies, different cultures, but common themes. Raise the quality of life through the release of the human spirit, a spirit that knows no geography or language or nationality or ideology–just quite simply–freedom. These actions reaffirm my ideal of what a university should be about. You and your colleagues and your students had a great deal to do with that part in reaffirming your university in Eastern Europe.

The New Crossroad: Academic Freedom and Faculty Development

Now you are at another crossroad, as are we in the U.S. and the Western world. There are new debates and new decisions to be made. What role should your institution play in helping this new social and political order? Each person comes to this life in raw form to be shaped either into bondage or into a life of freedom. And the challenge to education therefore is to mold the potential in each person so that they possess in their own being the capability of discharging their responsibilities. By your actions, you and your institutions in the Eastern part of Europe have assumed that role.

There is another calling, however, and I think another great responsibility of your institutions–an expanded part of your mission that also should be common ideas–some of the tenets that I think have undergirded us and some of those I think that will remain with us.

First, academic freedom should be the epitome of a country's idea of freedom. The protection and nurturing of the process of inquiry should mirror the same quest of the citizenry in both the open market place and the arena of politics. As some say, it's the pursuit of truth that we should be all about–and perhaps the process of debate is more important than the outcome. We sometimes think of freedom as independence to choose a research agenda, and now I suggest the research agenda should reflect both the needs and aspirations of the citizenry.

The second tenet is obviously the resource that you deal with most closely, and that is the admission and the promotion of the faculty. You search for the best and most vital to carry your institution to the next level, and then you revere them and you reward them.

Toward An Educated Citizenry

And finally, there is the tenet regarding students. It is my belief that students should not be selected because they are socially or economically well off or have some distinct advantage, but rather for their intellectual curiosity and the devotion to the ideas that you have and that they, too, share. Almost 200 years ago, Thomas Jefferson talked about the cornerstone of democracy being the educated citizenry. And that democracy was always in good care when in the hands of an educated citizenry. I believe that was true then and I believe that will remain true in the years to come.

I have been told that most Nobel laureates conceive of their ideas and do their best work before the age of 35. Perhaps this is because in youth the mind is open and people do not know what is "impossible." But as we age, we gain not only knowledge, but the discipline to refine and redefine the problems that we seek answers for, perhaps coming up with solutions to new questions.

If I look at a university and make the same analogy then, that as we age, as we gain additional knowledge, as we take risks and we define and redefine, one of the values that we must protect is that process of constant renewal, so that research and its findings don't become stale. Be mindful that the process of renewal must be undertaken with the same vigilance as the protection of your institutional independence.

You are not alone in Eastern Europe in your quest for what your ideal political model will look like. We in the United States have spent an enormous amount of intellectual, political, and social energy defining our political economy in the last 75 years.

Two years ago, I visited with a party chief in this great city and he lamented that he had served the party devotedly for 40 years, only to be told it was all a mistake. I was reminded that the great experiment that he had been involved in started out with the promise that social justice and egalitarianism would automatically lead to greater wealth and equality of life for all. Conversely, our models started out under the premise that the reverse was the case, that it was individualism and the accumulation of wealth that would ultimately lead to social justice. Neither of our models has arrived at the stage of refinement. The goals have not been achieved, so we in both countries are debating the paradigm shift. And our institutions of higher education should be the focal point for that debate.■

The University in a Free Economic Society

by Chase Peterson

We will be well served if the Alliance of Universities for Democracy facilitates the exchange of some faculty and some students. We will be additionally served if we can share educational planning models–that is, the Eastern European universities and their models, and the American universities as they revise their models for the new world we face. We will be wonderfully served if the model we propose, or further modifications and iterations of it, are successful in attracting corporate or foundation or government support.

Thirty-four years ago in Bucharest, Hungary, there was an heroic but tragic discrepancy between what Hungarians thought the Western world would do if they stood up to tanks and what the West, and particularly the U.S., did and perhaps could do. Today, thanks to the moral leadership of many world leaders and particularly President Gorbachev, expectations in this region are not measured in tanks and bullets, but rather in human will. However, we must work hard and be persistent and cautious about what we presume we can do for each other.

L. to R., Erno Zalai, Vice Rector, Budapest University of Economics; Zdobyslaw Flisowski, Deputy Rector, University of Technology, Warsaw; Lamar Alexander, Former President, University of Tennessee, and presently U.S. Secretary of Education; Peter Cenek, Vice Rector, University of Transportation and Communication, Zilina, Czechoslovakia; Chase Peterson, President, University of Utah; and Andrzej K. Wroblewski, Rector, Warsaw University.

The University Role

What then is the role of the university in a free economic society? From the American perspective, the university teaches all points of view if possible; it discovers and creates new knowledge and it serves as a bastion of social criticism, keeping society honest, as it were. These three basic responsibilities all derive from what we term "academic freedom," which is particularly precious in our American university tradition. In addition, the American university has played other roles, such as the promotion of cultural development. The symphonies, the theaters, the arts in our communities and our regions have regularly come out of our universities. This differs, I suppose, from the larger role played by the state in European culture. But finally, what is the role of the American university in economic development? What precisely is university-sponsored economic development? It is the spin-off of ideas, of engineering and agriculture and science–particularly for the betterment of society–the "new and better mousetrap," if you will, ideas conceived within the minds of faculty, but generally developed outside the faculty or the department. Now, that development requires management skills, involving schools of management, social science, and even humanities. It requires capital and technically trained manpower, and we've found that is generally best accomplished outside academic departments. Let me give two examples. The University of Wisconsin was asked many years ago to intervene when cows in a dairy were dying; and so they sent a veterinarian to the dairy. He quickly concluded that something the cows were eating was causing them to die; then he brought in a biochemist who analyzed chemical products coming from a fungus growing in the grass in the pasture. The biochemist identified the chemical as something which [destroyed the blood's clotting capabilities] and by killing the fungus, [he saved] the herd.

Technology Transfer

You might say that this is the traditional role of an agricultural institution. But it became one of the first examples of technology transfer, because this thoughtful scientist, after concluding that a chemical was killing the cows by preventing the blood from clotting, wondered if an animal might be killed *intentionally* by the same chemical. And so Decon rat poison was born. It's nothing more than the chemical synthesized from that fungus, given in concentrations in a bait attractive to a rat. Even better than that, if you can kill a rat with this excessive anticoagulant, you might also help a human who may have trouble with phlebitis or excessive clotting of the blood; and hence, the development of Warfarin [a blood thinner]. Therefore, saving a herd of cows turned out to be a project in technology transfer, resulting in the making of Decon to kill rats and Warfarin to save humans, and [it] has [generated] millions of dollars for the University of Wisconsin.

At the University of Utah in the 1960s, David Evans was an engineer with an early interest in computer graphics, who founded that department at the University of Utah and was a distinguished professor with us for a number of years. His mind then turned to technology development, and he ultimately developed a company called Evans and Sutherland, which is now a major computer graphics company. [That company] incidentally, makes the graphics that allow you to learn how to fly an airplane without ever getting into one.

One of our graduate students went to another university, taught for a period of time and then moved on into technology transfer and formed the WordPerfect Corporation, which is a major company in the field of software and transmission. Another graduate student of his taught at a university briefly and now is the head of Novell, a major computer graphics company. And the largest computer graphics company in the world, located in California, in the Silicon Valley, was founded by one of David Evans' graduate students. The American movie industry Academy Award for animation last year was given to a company called Plexis, run by another former graduate student. And now, in a return of a second cycle, the University of Utah, Cornell, North Carolina, Carnegie Mellon and Cal Tech are all in competition for a second generation of computer graphic research stations to be funded potentially by the National Science Foundation.

Encouraging and Maintaining

These four or five companies and a new research center very possibly have all spun off from a traditional professor whose mind then moved onto other things. Now these other things are not uncomplicated benefits to a university. They are problems. The opportunity for technology transfer and resulting contribution to a free economic society certainly can provide faculty with distractions from their primary responsibilities–and if not distractions, very often jealousies, because you can imagine the money that has been made by these people

as they develop patents, as they develop royalties, and then move on to company formation.

This matter has been debated heavily in America for the last five or ten years. I don't think anyone claims to have the exact answer to how to deal with this issue of both encouraging technology transfer and maintaining responsibility for fundamental traditional faculty duties. At the University of Utah we have put our trust in close monitoring. We ask the department chairperson simply to know what his or her faculty are doing, and as faculty develop ideas that have the potential for transfer, if it requires time away, then release time is given or faculty can be put on half time. And with respect to the sharing of profits, if there are any, we've come up with the general notion that if money is to be made from these ideas as they spin out and are developed, the profits would be shared in thirds. The patents and ownership belong to the university–the faculty person developed them while working at the university–but the profits are shared one-third to the investigator, one-third to that investigator's department–as if to say thank you for tolerating this maverick while pursuing these irregular things–and one-third back to the university. This model has worked for many American universities, and it works for America. Just reciting some of the new terms describing regions of America are expressions of the success of technology transfer–California's Silicon Valley, the product of technology transfer out of Stanford; the North Carolina Triangle Park.

There are 10 or 15 such spots in America, all prospering both regionally and adding to national prosperity, and we would be pleased to share this model with Central and Eastern European universities and see how it might be replicated or modified to fit the local circumstances.

Challenges for Change

However, consider for a moment, in addition, how American universities can learn from Eastern European universities. Our history clearly lies with our Western European counterparts, but . . . Eastern Europe faces a clear challenge for change and these challenges are as exciting for us in America as they are for you. Just as the new economies of Japan and West Germany rose out of the ashes of war, now new university norms may arise in East Europe after a 40- or 50-year delay, with more freshness and determination than if your universities were simply taking up again in 1945 where they left off in 1939.

American universities do not have that paradoxical advantage of disruption that I would argue may potentially benefit Eastern European universities, and we need to learn from you as you learn and as you work your way through your disruption.

The U.S. university and, in fact, the U.S. society faces slow revolution. We face this revolution in our streets, and in our deteriorating culture, but in that slowness lies both safety and the danger of complacency. Our challenge in the U.S. is to meet new challenges without the advantage of the awakening abruptness of war or revolution or crisis. In addition, you in Eastern Europe, as you probe these opportunities, consider whether your university can be as free as you now wish your societies to be. American universities have truly been free in the sense of the individual faculty person. That faculty person is at best a marvelously independent creative thinker, and, in fact, American industry has looked at the university and seen the creativity of the individual faculty person and attempted to recreate that creativity, if you will, within the corporate structure by establishing zones outside the corporate norms where individuals can have the freedom in the corporation that they have traditionally had in the university. But American universities institutionally, as opposed to the individuals who constitute them, have been remarkably cautious and conservative places. At least you now have the crisis. You have the counter-revolution, you have the moments when those things might be rethought, and I would suggest that we will be watching, because out of your solution you may find ways to make your universities institutionally as creative as their individuals have been and as you hope your society will be. ■

Consequences of the Alliance for East European Universities

By Jerzy Dietl

Despite certain common characteristics of the post-communist countries left by the spectre of the totalitarian system, these countries differ quite considerably and, what is more, the tradition of their universities is not always the same.

In terms of economics, no matter how fast the post-communist countries switch from non-market to market regulation, major gaps separate them from market-economy countries. The speed with which the gaps are diminished and the scope of this process will be determined by a consistent change of the socio-economic system and a strategy of structural changes; assistance provided by and cooperation with the market-economy countries; and readiness and patience for introduced changes displayed by particular societies and in acceptance of costs involved by these changes.

The Gaps to be Filled—Structural, Technological, Organizational, Social, and Ethical

Five fundamental gaps can be distinguished [that] should provide premises for various activities launched within the framework of The Alliance of Universities for Democracy.

- A *structural gap* results from over 45 years of allocation of economic and social resources that omitted market considerations. There is both a material dimension, expressing itself in branch, regional, microeconomic, and microsocial disproportions (e.g., within companies and institutions), and a non-material dimension finding expression in the neglect of talents, initiatives and educational accomplishments. Mitigating this gap involves not only investments, but changes in allocating economic resources. It also, or perhaps primarily, involves full privatization of production assets, commercialization of economic units, the demonopolization and allowance of competition, entry of foreign capital, and liberalization of market entries and exits for new economic entities. The last one is especially important, because I don't think that the structural gap can be bridged to any major extent through reconstruction of the existing ill-allocated production assets. Of primary importance here is setting up thousands of new small firms. They will provide a basis for a natural concentration of capital and the reappearance of a middle class as a driving force of contemporary societies. It is here that our role becomes preeminent.
- Tragically, the *technological gap* finds expression not only in the inability of our products to compete in Western markets, but also in their poor adaptation to demand and to the aspirations of our society. The fact that the past system created a permanent barrier to market-oriented technological progress accounts for a marked decay of the social and individual propensity to innovate. Our role should not be restricted to the transplantation of Western technology alone. It should encompass the evolution of a creative man, both sensitive to a demonstrative effect and capable of original initiatives. That is why, as has been rightly pointed out, universities must carry out implemented strategies, including their relationships with and role for the public.
- I believe that our Alliance can perform an important role in diminishing the *organizational gap* resulting from an absence of organizational infrastructure and a social consciousness indispensable for a contemporary market economy. For illustration, consider the following:

It will be necessary to build or rebuild the foundation of institutions after determining the effective functions of the market, especially the capital market (banks, stock exchanges, auction houses, securities commissions, etc.):

1) Systems ensuring conditions comparable with a market economy (standards and classification of products and services; accounting systems; tax systems) will need to be introduced.

2) Infrastructures (telecommunication, transport, roads, computerization) will need to be developed.
3) Along with the systems, education and practice in the field of management are needed.

- A *social gap* resulting from the evolution of a collective man, a passive man–Homo Sovieticus, a creature not adapted to the contemporary market economy–will need to be bridged. Some distinguishing characteristics of the Homo Sovieticus are an insufficiently developed spirit of entrepreneurship, expressing itself in a disinclination to take risks; a low propensity to innovate; a disinterest in local social structures and local traditions; and a frustration with professional work and an unwillingness to raise one's qualifications.
- And finally, the *ethical gap* is of greater importance than is generally believed. Not only the consequences of the bureaucracy-ridden total system, but ethics in professional and economic life–accepted standards which are developed through generations of competition, market mechanism and decentralization of social and economic life, creating conditions for the emergence of socially-accepted professional ethical codes.

The New Society

In spite of the fact that Poland, in comparison with the other post-communist countries, is characterized by greater tolerance for the sciences, the Polish universities did not escape the destructive forces of the communist system. I tend to believe that full autonomy and a decentralization of the academic institutions will not improve the situation to any major degree, and in some cases may even deteriorate the situation.

At this point it would seem advisable to draw attention to some facts and their historical determinants. The Soviet-type university was and is a negation of our European university tradition. The recruitment and selection of staff in academia, particularly in the social sciences, was a negative process because the ultimate objective was the installation of docile executors of tasks who were unable to think independently, who would subordinate to decisions of the Centre. Personnel affairs were charged to mafia-type bodies, with a decisive role played by the local party committees composed of people with the lowest professional and ethical qualifications.

To illustrate the situation, I shall focus on the courses offered by departments of economics. In the years 1949-1950, European traditions of Polish economic courses at universities and business administration courses at academies of commerce and economics were destroyed. Among others, very narrow specializations were created, distinguished according to sectors of the economy defined by the system of central planning. Later on, methodological criteria were applied, separating methods from their subjects. A graduate would obtain a scope of information of descriptive character allowing him or her to execute tasks obediently, but barring independent decisions. Students had no time for studying on their own, due to an excessive burden of different classes and seminars which were all compulsory. Many scholars were removed from the Polish universities to be replaced by numerous groups of persons possessing "appropriate ideological qualifications." A marked improvement occurred after 1956, also in the field of staff recruiting, although the structure of academic courses itself did not undergo any major change. The year 1968 witnessed a major purge among academic teachers and researchers. Many of them had to leave their posts; others were forced to emigrate. Numerous new associate professors without scientific qualifications were nominated solely on the basis of political-ideological criteria. Many of them were later promoted to full professorships. The idea of university studies was lost, competition among researchers was destroyed, an anachronic structure of academic courses was locked into place, and traditional ethical standards were eliminated.

Reforming Academic Institutions

I emphasize these points only to illustrate that today's higher education institutions in Poland, with very few exceptions, are not able to reform themselves or to adapt their curriculums to the requirements posed by the contemporary economy–nor to have a positive influence on the social environment. Negative structures have, moreover, consolidated themselves as a result of delayed elections of the university authorities. Their replacement has unfortunately not been linked with the liquidation of the communist party. Few of the present professors are capable of reforming academic institutions. A bigger inclination in this direction is shown by young researchers and students–students not only of universities but also polytechnical institutions. It is not accidental that there are many schools and management centers outside of the universities, because the universities are unable to adapt to the requirements posed by the contemporary economy. Moreover, foreign aid for training in the field of management bypasses the academic institutions, as

allocating funds to them would not be effective. That is why, for instance, in Lódz, the "Foundation for Development of Entrepreneurship" was set up, which aids different training initiatives and provides management training, including training programs assisted from abroad. The Foundation will also strive to promote the reform of the university courses.

It should be noted here that Polish academic institutions are poor. What is more, they do not possess favourable conc itions for generating their own sources of financing. Academic education continues to be free of charge, and salaries are fixed centrally. Every academic institution is fully dependent upon the central budget. In this situation, they do not have any motivation for providing additional services for the social environment. The inflow of new, gifted young people to the universities is limited at the present time, because attractive new possibilities have opened up for them–in particular, setting up one's own private firm. It is also relatively easy to obtain a fellowship from abroad.

Talented young scholars either leave the academic institutions or work less efficiently in them. For example, young people attached to socioeconomic faculties often set up their own consulting or other firms. Many valuable faculty members have taken jobs in the government agencies.

It was a tradition of the Polish academic institutions to radiate to their immediate social environment. A university was closely tied with the local community. A city used to be interested in the university life and a university in the life of a city, region, the whole country and their institutions. These ties were severed. After all, the old system sought to isolate the universities socially. They were subordinated to the party bureaucrats, deprived of their identity, *differentia specifica*, and exposed to dictates of the central authorities. Simultaneously, the middle class, private enterprise, territorial, economic and cultural self-government were destroyed. To assist in rebuilding these structures is an important mission of the universities. ■

The Role of Universities in Environmental Policy Research

by E. William Colglazier, Jr.

In the 1980s, universities in the United States placed a much greater emphasis on their roles and relevancy to economic development– in helping to come up with new ideas that can lead to new processes and new technologies that help their societies both regionally and at a national level. This is somewhat counter to the ivory tower model of the university trying to be much more relevant to societal needs.

Spin-off Companies

At the same time in the 1980s, the private sector, private companies, the national government and state government in the United States realized that higher education played a very important role in technological innovation, a key ingredient in trying to maintain economic competitiveness. Right now we are very much focused on our competition with Japan and Western Europe and trying to maintain our role in terms of competition with these very competent partners on an international level. In particular, for state universities like The University of Tennessee, state governments recognize that one of the biggest attractions in terms of attracting new companies to their states and in helping to spur new spin-off companies is the state's higher education system.

Universities have been quite happy to jump on this bandwagon to provide the kinds of programs that are needed, and partly because they realize that in order to attract more money–not only from government but from industry–they are going to have to make many of their programs relevant to the kind of needs that society faces. So, universities in the 1980s tried to become more focused in problems related to economic development.

There was a second evolutionary change, almost a revolution, that occurred in the 1980s at universities, and that was the creation of research centers that were focused on a particular problem or an area of research. The idea is to bring people from a number of important disciplines that are relevant to solving the problem and have them work together. In the early years of the administration of President Reagan, the National Science Foundation in the U.S. began to increase funding for the creation of these centers. At the time they announced the initiative in the Reagan administration for the creation of science and technology centers, they said, "We intend that these centers will be a way to change the very fabric of our research universities. Where individual academics have conventionally worked on issues within single disciplines, researchers from different disciplines in the centers would work in teams, preferably in close collaboration with industrial scientists." These centers are probably the single most important initiative in the Reagan administration science policy. Although various kinds of central research facilities have long existed in American universities, the current approach is to provide a new combination of ingredients, including industrial participation and heavy emphasis on education of graduate and undergraduate students, a focus on basic research that is nevertheless relevant to practical industrial problems, and reliance on multidisciplinary teams of experts.

I direct two research centers at The University of Tennessee. One is called the Energy, Environment and Resources Center and the other is called the Waste Management Research and Education Institute. Both of these centers focus on environmental problems. In our region we have probably the largest government energy and environmental research laboratory, the Oak Ridge National Laboratory, which we work with very closely. We also have the largest electric utility, the Tennessee Valley Authority. The University is lucky to be very close to both of these institutions, and because of the proximity, we have developed a number of programs in collaboration. So we thought not only of the strengths within our university, but of our nearby partners that could help to build a synergism.

Our programs are multidisciplinary. They include basic research, applied research and policy research–research involving social scientists as well as engineers and scientists focusing

on environmental problems. The environment is a big topic, so we had to choose particular subsets of the environment to focus on, and we chose areas where we thought we were particularly good. One was what we call environmental biotechnology, which is the application of modern biology to the problems of the environment. In particular, it is basic research related to the use of microorganisms to degrade hazardous chemicals in the soil and ground water, an area where there is a lot of technological innovation occurring right now. It is also an area of research which may have big potential spin-offs in the future in terms of cheaper ways of treating environmental pollution that has already occurred.

We will also be focused on two other areas. One is mixed waste management, which is a special problem in our region. Mixed waste refers to pollution or contamination that includes both hazardous chemicals as well as radioactive elements. At Oak Ridge National Laboratory they have a lot of problems that have been caused by mixed waste, so we thought that we could have special relevance there.

And last was the focus on policy research–focusing on important public policy dealing with the environment, and providing advice to the government, industry, and the general public.

Right now my center has about $8 million a year in research funds from either the government or the private sector. And that brings in an additional large amount of money for the university for supporting research, for supporting graduate students. The students at my university do not get their degrees in the research center, but they do work with their faculty members on research projects in the center.

For the state of Tennessee, we are looking at options for dealing with solid waste, we are involved in research dealing with acid rain, with the problem of global warming . . . from the burning of fossil fuels, we are looking at new ways to manage and protect the environment–pollution prevention, new production processes that might not use as many hazardous materials in the process itself, and safe substitutes for chemicals that are now hazardous.

International Programs

We are also involved in international programs in China and Japan. And last summer we, with Dave Hake and Evans Roth, had a grant from the United States Information Agency to bring environmental professionals from Eastern Europe to the United States to see how U.S. environmental policies are developed and what changes have occurred over the last 20 years.

So what are the benefits of having these types of research centers at the university? One is to have independent and objective advice–not only for government and industry but also for the general public. One thing that the university offers is the fact that they are a credible source of information. In a democracy, when the public tries to decide the most appropriate policies, it is often felt that individuals have either a vested interest or a conflict of interest. However, universities have a very high degree of credibility in society. So often, the public is much more willing to listen to an independent third voice that addresses these important problems in society.

The Environment

Let me last turn to the importance of the environment not only in my country, but in all of our countries. Polls have been taken in the United States asking ordinary citizens how important they think environmental problems are. One of the poll questions is "Protecting the environment is so important that requirements and standards cannot be too high and continuing environmental improvements must be made regardless of the cost." Back in 1980, 40 percent of the people agreed with that statement. Today in 1990, 80 percent of the public agree with that statement. And politicians in the United States have certainly gotten that message. Now in our elections, no matter which party the politicians come from, they all say they are environmentalists.

There was an interesting study done by the Environmental Protection Agency in 1987 in the United States. It was a study to determine the most important environmental problems in the U.S. The EPA brought in their in-house experts and asked them to rank the most serious environmental issues that deserved the most attention. They were asked to look at the risk in three types of categories–risk to human health; risk to the ecology; risk to the environment, plants and animals, and also to welfare; and risks to economic development on a scale of "most serious," "moderately serious," or "less serious." At the same time they surveyed the public in the United States about which problems they thought were most important. They also knew which problems were most important to the United States Congress, because the Congress appropriates the budgets for the Environmental Protection Agency. They found something curious in the

ranking of problems by the experts compared to the ranking of problems by the public and the ranking of the problems of Congress. They found a very close correlation, as you might expect, between what the public thought and what the Congress thought. So obviously, in a democracy, sooner or later the elected politicians are going to pretty much reflect the opinions of the general public. However, they did not find a very good correlation between what the public and Congress thought compared to what the experts thought. The number of the problems the experts thought were most serious at that time–things like global warming and preserving species–were not ranked very highly by the general public. This illustrates that in a democracy there obviously has to be a continuing dialogue between the experts and the public about what the most important issues are and where priorities should be set. I should remind you that even experts should remain somewhat humble. Often, experts have been wrong in terms of the problems that they thought were most serious or the ways to address them. And in a democracy, the public is going to make the ultimate decisions about where our resources should be allocated.

This past year, in 1990, the Environmental Protection Agency decided to update that study in addressing priorities and published a very interesting report called *Reducing Risks: Setting Priorities and Strategies for Environmental Protection*. They used their science advisory board to go back and look at this study in trying to assess what the most important environmental problems are, at least for the United States to face. And they came up with very similar conclusions to the original report. The United States has been making investments in environmental protection for the last 20 years and problems that were the most important in the 1970s, such as air pollution and water pollution, have in many cases improved, so now those problems are not quite as important compared to some of the others. There is a much greater focus now on some of the international and global environmental problems. But in terms of natural ecology and human welfare from the United States' perspective, the problems that were listed as most important were habitat alteration and destruction, the extinction of species, the depletion of the ozone layer, stratospheric ozone and the global warming problem. In terms of human health, the issues that were listed as most important were ambient air pollutants; worker exposure to chemicals in industry and agriculture; pollution indoors, both from radon and other chemicals that are produced inside the home; and pollutants in drinking water. All of these are probably not the top list of priorities in Eastern Europe. I think it does illustrate that when our resources are limited, we have to decide what are the most important problems. What are the biggest opportunities for the reduction of risk? Let me also mention that even though we have a problem with the environment in the United States and elsewhere (environmental protection now is big business in the United States), there are a number of companies that are doing quite well trying to solve environmental problems. Often in a market economy, a democratic system, problems can soon be turned into opportunities.

In conclusion, let me mention the role that the Alliance might play in aiding universities in Eastern Europe. In my own role, I would like to try to help raise funds in the U.S. to provide seed money for the creation of multidisciplinary research centers at universities in Eastern Europe. My own particular interest, of course, deals with environmental problems, and we would try to bring together several universities in the U.S. which have environmental research centers to provide advice and consultation for any Eastern Europe universities that are interested in focusing on environmental problems. It might be that that's the best way to provide the right mix of talents to focus on some of the problems. ■

Coordinating Environmental Protection Programs in Eastern Europe

by Steven Wassersug

The Regional Environmental Center came into reality after a visit to Hungary by President Bush in 1989. It was suggested that an environmental center be created between Hungary and the United States to deal with the environmental problems. Initially, funding was approved in the United States called "Support for Eastern European Democracy," for which the United States proposed approximately $5 million over three years to support the concept of this center. However, at the initiation of the center, the European community and the Netherlands quickly became involved, offering major contributions to the center in terms of land and financial and personnel resources.

It was recognized that many of the environmental problems involve the shared environment between countries, so Bulgaria, Czechoslovakia, Yugoslavia, Poland, Romania, and Hungary all are encompassed in the scope of the center–six countries at this time, with some interest expressed [by] the Soviet Union and some of the Republics.

The center was created by charter as a nongovernmental organization. It is nonprofit and neutral politically. These are very important concepts for us as we begin to fulfill the mission of the center. It is important to our constituency that we are nongovernmental yet able to build bridges with governmental institutions, industrial institutions, and communities.

While Budapest is the location of the center, it is very important to understand that our planned activities equally involve all six countries. That is a very large task as we begin our undertaking! We have been open for only about five weeks and yet we have probably had close to 3,000 visitors, including presidents, prime ministers, university people, and industrialists. We've also had the opportunity to meet with representatives of the World Health Organization, the United Nations Environmental Program, OECD in Paris, the Yaza Organization, Implied Systems Analysis in Luxemburg, Austria, and other groups with a number of programs they are interested in developing.

The center has a 15-member board of trustees, with 14 board memberships filled at this time. Approximately one-half of the membership of the board is represented by nongovernmental organizations; a quarter is represented by the industrial sector, and a quarter by government. Clearly the predominant goal is to provide information in a neutral setting; to help people look at the options as they make environmental decisions, considering that some of the decisions involve trade-offs of heat or food. The decisions will not come easily. We hope to be able to balance economic growth and environmental protection. We are looking to find attractive solutions for East and West for long-term sustainable consumption in conservation and nature.

The areas that we focus on primarily are data collection and dissemination. And from the data collection standpoint, we have some sophisticated geographic-information software to distribute data and information throughout the six countries. One of the keys, of course, is insuring quality group data and making sound interpretations on the future of the environment and regulations and choices. We also have a great deal of information–data bases stored in the form of CD-ROM disks, which hold data and information on technology worldwide. We are establishing a very strong infrastructure with the data sets so that people can come to the center, utilize our equipment and access the data. We are trying as well to get a telephone exchange that will offer the system fully throughout the region.

Public Involvement

We are trying to make sure that we involve the public so that as we make the appropriate decisions, we link all the affected groups. We are also trying to work in a number of project areas to translate some major international environmental films as well as produce some ourselves. We are going to host a number of workshops. We are also trying to set up internship and fellowship programs at the center, bringing in Central and Eastern Europeans to serve for a period of time at the center to learn some of the techniques and to bring back information to us. Also, the United States Peace Corps has over 200 volunteers here from three countries to teach English. They are now working on programs that are going to involve working in the small communities at the grass roots to deal with environmental initiatives and environmental programs. As a clearinghouse, we are trying to match experts to needs.

A major mission of the center is to fund projects. We have a program announcement which specifies terms and criteria about the types of activities the center is looking for, whether or not funding is being sought, whether or not we try to co-sponsor workshops or other things. So this becomes very important in terms of relationships and certain cooperative efforts.

I've given you an overview of the plans that we will be developing over the next several years. In terms of the challenges, I think they are unlimited. We are going to need lots of help and cooperation–letting other people know about the center, and sharing with us information about some of the problems, so that we can provide the the support to assist in making those environmental decisions. ■

Moving Individuals from the Complacency of Central Planning to Risk-Taking Entrepreneurship

by Ladislav Kabat

For more than four decades Eastern Europe was almost completely isolated from the worldwide political and economic arena. Basic human rights were ignored. Thousands and thousands of innocent people died. Hundreds of thousands were persecuted. The obscure concepts of social equality by official state ideology excluded any driving force in our society. There was no real reason to work more or to work better. The concept of private enterprise was misinterpreted as unfair and was accepted neither as an economic approach nor as a way of life.

State institutions and the state budget were presented not as distributors of the national income, but as the generators. It was the role of the state to decide who needed new shops, new health care, or sports facilities. Profit-making firms had to share the proceeds with cooperative companies. Almost all of enterprises and farms in our countries had to be subsidized by the state, since the state could apply many so-called free-of-charge prices and public programs.

For almost 40 years we were taught that only the state and its institutions could handle the needs of the people. Undoubtedly, our past experience has affected our current political life and our social struggle for new dimensions for our future. We know that the old economy should be embraced by some new economic and social policies. But what should this voice be like? What should be the role of the state? What should be the role of private and public institutions?

Two different approaches can be identified. The first one underlines the role of the wise and strong government. The supporters of this philosophy believe that only a centralized power is able to overcome the problems of our devastated economy and society as a whole.

The second approach emphasizes local operatives and private initiative. To define an adequate role for the state in our new society is not easy. We should take into account that we are dealing simultaneously with the economic and political restructuring of our society. For that, a strong state, legislature, and administration are necessary. A teamwork approach among government, business, and academia is only the possible course of action.

State institutions must now create an environment of free and fair trade and competition and put into place a form of checks and balances, regardless of political leadership or internal disagreement.

Educating the People

Of course, a lot of educational work must be done. At present, based on 40 years of experience, it is difficult for many people to understand that some shops might be closed, some enterprises and farms will be forced to go out of business, and some will lose their jobs.

In addition, we are faced with an uninformed body of university graduates. Approximately 20-40 percent of our university graduates have not been able to find adequate jobs. Short-term, six-month plans of state supported training programs aren't enough. It is feared that almost all graduates majoring in economics management, bookkeeping, accounting, and many other social sciences need comprehensive university programs or ful academic course loads over several years. The state is also expected to offer these young people some new programs encouraging private initiative and entrepreneurship.

Although our country has begun limited privatization which includes new shops, small services, and restaurants, many new entrepreneurs are not specially trained, and for many of our citizens, the market economy is something akin to anarchy. It is the responsibility of higher education institutions to teach what entrepreneurship is.

The role of universities in the social and economic development of our country during the last 40 years has not been very active. Government and institutions are used to working with individuals, not with universities. Of course, we in academia are not fighting for political power, but we are prepared to take an active part in shaping our new economic structure. To help overcome the existing philosophy of equal economic rights for all members of our society, we have to go back and educate millions of our people and explain to them the concepts that encourage them to think and to decide, to doubt and to trust, to compete and to incorporate, to win and to lose. We must educate people to accept differences in income based on individual work performance. We must also change the curricula within our universities and the content of our study programs. We have to start with basic economic theory, and we have to teach our new managers how to create and operate small firms, how to organize operations, how to run small companies. We need to develop a new relationship between producers and consumers. We need to show our new entrepreneurs that the market mechanism has to encourage risk-taking activities.

Of course, entrepreneurship cannot be a final goal of our transformation period. The new economy is only a tool for raising the standards of living and improving the quality of life for our people.

Millions of our people are ready to discard the structure and philosophy of a central planned economy, and most are also ready to accept a free market economy. All of these people expect better living standards, social and economic choices. It is our great opportunity, but it is also a great responsibility to take an active part in searching for new tools and rules which will enable us to cope with these changes. We do believe that our newly signed Alliance of Universities for Democracy, supported by the generosity of U.S. academic, business, and other private and public institutions, can help us make the transition. We rely on such help. We believe that our newly born societies–especially our young people, our students, who will perpetuate our alliance–are really worth helping. ■

Setting Environmental Priorities In Re-emerging Countries

In Eastern Europe, citizens of re-emerging countries face the overwhelming problem of cleaning up a polluted environment that the communists neglected for decades. How they will go about it and how they will pay for it are issues that are yet to be resolved.

by Jeanne McDonald

When the Iron Curtain parted in Eastern Europe in the fall of 1989, westerners were prepared to applaud the new-found freedom of the Eastern Bloc countries, but the view backstage revealed a final devastating scene. After a half century under communist rule in which governments replaced markets and farms with industrialization as espoused by Marx's *Communist Manifesto*, Czechoslovakia, Poland, East Germany, Hungary, Romania, and Bulgaria were blighted with all manner of crippling pollution– acid rain, industrial waste, polluted air, soil, and water. The Danube, cited in song as beautiful and blue, had become the filthy receptacle for waste from eight nations. In historic Krakow, a university town and intellectual center, sulfur dioxide and fluorine from 19 factories were inflicting environmental havoc.

Industry in Eastern Europe has kept up with neither technology nor environmental safeguards, and pollution controls have ranged from inefficient to nonexistent. An article in the June 1991 *National Geographic* states that at the Nowa Huta steelworks in Krakow, where, under the communists, 170 tons of lead were released into the air each year, electrostatic precipitators designed to limit the escape of dust were turned off at night to save the cost of electricity. Since the factory's recent closing, pollution levels in the air have diminished by at least one-third.

In the "dirty triangle" formed by the coal belt of eastern Germany, northern Czechoslovakia and the Silesian district of southern Poland, acid rain is eating away the forests and burning coal blackens the air and soil. Hazards from all sources of pollution threaten not only the lifestyle but the very lives of inhabitants of the east European region.

As the insidious coal dust settles, as acid rain bites into the woodlands and cadmium pushes its deadly fingers into the soil, it has become painfully evident that under communist rule, the human condition was virtually ignored. Because of government careless-

ness or indifference, workers in specific and the population in general are still exposed daily to pollutants that increase the risk of cancer, respiratory problems, liver damage, bone defects, anemia, mental retardation, birth defects, and declining life expectancies.

The enormous task of repairing the damage, eliminating the risks, and preventing future erosion of the environment is not just a question of governments' dragging their feet. The incredible financial burden of protection and prevention have to be weighed against the overwhelming cost of stabilizing newly organized economies. Citizens concerned with finding enough food and getting work in order to feed and support families do not consider cleaning up the environment a priority. Compounding the financial problem is the fact that when governments close down uneconomical factories to create a more efficient work force, massive unemployment results. For example, thousands who worked at Nowa Huta not only lost their jobs, but are now untrained for other work. With all these problems, finding ways to finance environmental cleanup reforms and preventive programs will be even more difficult.

The same *National Geographic* article mentioned earlier cites the following hazards for the Eastern European region:

- In Bulgaria, industrial waste pollutes almost 70 percent of the farmland and 65 percent of the river water.
- In Czechoslovakia, only 50 percent of the drinking water meets the country's own health standards.
- In eastern Germany's industrialized areas, 50 percent of the children are afflicted with bronchitis and eczema.
- Among Poland's 38 million people, one-third live in "ecological hazard" areas.
- Ten percent of the Hungarian population has unsafe drinking water.
- Most of Romania's sewage-treatment plants are defective, and the largest city, Bucharest, has no sewage-treatment plant at all.
- Nearly one million acres in Czechoslovakia and more than 600,000 acres of forestland in Poland have been damaged by acid rain, some from coal-burning industries, and much of it borne on winds from the west.

An Environmental Symposium

Last summer, just after communist walls began crumbling in Eastern Europe, an Environmental Symposium in Annapolis, Maryland, brought together 13 delegates from 8 European countries. Under the auspices of a USIA grant won by David Hake, director of the Center for Business and Economic Research (CBER) and the East European Center (EEC), and L. Evans Roth, Assistant Director, EEC, and professor of cell biology, the foreign visitors toured the sites of U. S. environmental successes, studied other ongoing preventive programs, and met with legislators and agencies. The foreign officials came from Bulgaria, Czechoslovakia, the German Democratic Republic, Hungary, Poland, Yugoslavia, Austria, and the Federal Republic of Germany. Members who attended the Symposium also helped develop the agenda for the Alliance of Universities for Democracy, an international organization dedicated to helping restructure higher education in Central and East European countries. The environment is one of its top priorities.

In the difficult year that has followed the Symposium, international attention shifted to the gulf war and the horrific environmental effects of that conflict. Meanwhile, pollution problems in Eastern Europe continue to mount. Every day people die or fall ill, forests are killed; air, water and soil are contaminated. Recently, we surveyed Symposium participants about what has happened in their own regions over the last 12 months. Their comments are recorded below.

HUNGARY

Angela Lely calls herself a green-thinking activist member of the Action Group Against Air Pollution in Budapest. In her words, the Hungarian people have simple needs: "We want to breathe clean air, to drink clear water, to eat healthy food, and to have a safe home." With severe problems in the water supply in her country, she realizes that even those seemingly simple goals may prove difficult. When she came to the Symposium last July, she had judged the world from an Eastern European perspective. "I was an idealist," she said, "inexperienced, and had imagined I was a scholar." She was also a "green idealist," but on the trip realized "that development and environment may be compatible. I understood that attainment of the desired goals is not by way of the flat refusal, categorical negation, or declaration. There must be necessary dialogues [and attempts] to reconcile different interests."

A More Reasonable Future

Angela Lely did not feel more *hopeful* about the future after meeting with other environmentalists, but certainly she began to view the future as more *reasonable*. In her country, she emphasized, the right to a healthy environment was not yet numbered among human rights. But she was amazed at the gigantic efforts and accomplishments in the United States. "For hours I walked on the streets of the capital without having a headache," she said, "without my eyes stinging, without my throat being irritated by smog. Unfortunately, I cannot gain such an experience at home in Budapest." People in the U.S., she remarked, have time "to live, to train on their own, to carry out their tasks and to have a good time. But I am afraid that the sums spent for the environment are partly wasted because of overconsumption."

At the Symposium she was most impressed by the idea of regional and international cooperation in pressing for environmental reform. "Information on the environment should be open and available for anybody," she said. "Then it would be necessary to reconcile [various] interests without any nationalistic narrow-mindedness. Rescuing the environment is our common task, so it is difficult to imagine saving nature without the willingness of all developed countries to make sacrifices. I was pleased to see the common management of energy sources in the U.S., the participation of universities in the research, the coordination of activities in research and business, and the flexibility of the task-oriented teams. It was very illuminating—the process in itself—how [Americans] managed to stop the deterioration of the environment, and later, how [they] managed to improve its state—at first [by] the comprehensive act, and then [by] creation of the institutional system on federal, local and regional levels."

The Most Serious Concerns

Ms. Lely considers air and water pollution problems in Hungary the most serious concerns the country faces. What are the present chances for reforms? An environment protection minister has been appointed, "though his name sometimes changes," she says, "but this ministry has neither serious financial assistance nor a real say in matters. It is isolated." In addition, "we have inherited from the old regime the ideas of great investments, e.g., the water barrage system at Bos Nagymaros and the proposal to host the Budapest-Vienna World's Fair in 1996." If the Parliament approves the Fair in September, the environmental aftermath could be disastrous. More than one-fifth of the country's population lives in Budapest, the city which 10-20 million visitors would visit over a six-month period. Such an influx would burden already unstable environmental conditions. Water in the rivers and lakes is contaminated and at many sites, waste has been illegally dumped, even in the National Park. The soil in the country was polluted by the Soviet army, resulting in immense damage.

Building of the dam at Nagymaros stopped last year on the Hungarian side, and negotiations are presently underway with the Slovak government about the building on the Bos side. Ms. Lely termed the environmental damage caused by the construction "gigantic."

There are countless other problems. Since the accident at Chernobyl, nuclear power stations have naturally been unpopular in the region. Previously, waste from nuclear stations like the one at Paks was transported to the Soviet Union. Some Hungarians would like to establish an independent energy supply in Hungary, but others are reluctant to deal with the transportation and accommodation of nuclear waste. Recently an incinerator was reconstructed at Dorog and the wasteyard for solid and liquid hazardous waste at Assod has been enlarged and equipped with new technology.

Attempts at recycling have so far proved frustrating. "It has not been worth trying, [not] for the sellers and manufacturers, [not for] the customers." An experiment for selective collection in Fonyod on the shore of Balaton, the largest lake in central and western Europe, failed. Financial aid for the project was cut this past year from 250 to 150 forints (about $2 million). In the peak tourist period, its sewage farms are burdened 180 percent. Furthermore, the national program for protection of the water quality of the lake has been delayed for five years.

With the changeover to the market economy, said Ms. Lely, came increased devastation of the green areas. The newly organized independent governments have little money at their disposal and can obtain funds only by selling or leasing land. With the influx of western entrepreneurs planning extensive construction sites, particularly in the inside districts, the proportion of biologically active surfaces has decreased even further.

Financial problems breed other environmental problems. In Budapest more than 50 percent of the air pollution comes from traffic and industry. The average age of passenger cars in Hungary is 10 years. That means many cars have 20-year-old motors and are not technologically equipped with pollution controls, subjecting citizens to excessive quantities of carbon monoxide, nitrogenoxide, carcinogenic hydrocarbons, and lead, sometimes exceeding acceptable limits by more than tenfold. A

measurement of lead contamination in the blood of Budapest residents showed higher than acceptable levels of lead concentration in 88.6 percent of the children examined in the inside districts, and higher than acceptable limits (based on adult limits) for 57 percent of the examined children living on one of the busiest Buda streets. A plan is underway to decrease traffic in the capitol by building a by-pass. .

Some Positive Aspects

There *are* some bright spots. Last year the president of the Hungarian Television Association agreed to give more air time to ecology and environmental education. He kept his promise. As a result, Ms. Lely said she is beginning to perceive a change in public awareness, especially through children's programs. In addition, books about the ecology, flora, and fauna are among the most popular publications.

"Maybe we are impatient," said Ms. Lely. "An environmental protection act is still in preparation, and a decree with legal backing of studies on the effects on the environment is underway. But there is not enough money, there is not enough time in Parliament to debate environmental protection, there are not enough powerful spokesmen, there is still the old system of institutions. The issue of the environment must be treated in its broad complexity: public health, traffic, energy, finances, national welfare, economy of land and agriculture."

Ms. Lely believes that the hope for Hungary's future lies with the Action Group Against Air Pollution. "We have constant contact with the ministries, with the Committee on Environment of the Parliament, with the other NGOs, with the independent government, the green fractions of the parties, with universities and research institutions, the press, television and movie companies. Ideas, proposals and demands must be built into a government program. For example, the action group has proposed to the government that part of the cost per litre of gasoline will go to environmental protection." With the future cooperation of other countries with mutual borders, perhaps more beneficial results will ensue. She hopes for cooperation among Italy, Austria, Hungary, Czechoslovakia, Yogoslavia, and Poland. In the meantime, public awareness is a vital element for success. Says Ms. Lely, "The story must be told."

YUGOSLAVIA

Fedor Cerne is a former advisor to the Slovenian Minister who now works for the Slovenian Ministry of Environment and Physical Planning. Since he attended the Symposium last year, environmental policy that had been developed in his country from 1986-1990 changed completely when the Green Party recently came into the government. During that period several reforms had been instituted: more support was pledged for environmental protection; the eco-fund law was effected in January 1990; programs on water, air, soil, and waste management were begun; and a decision was made to substitute gas for coal wherever possible. At present the government is preparing the *new* environmental protection law. One of the sites to be affected is the huge industrial waste site near Maribor. Also being instituted are small (and, he says, rather ineffective) changes in the tax system and changes in the prices of leaded and unleaded gasoline.

The country's last environmental report was made in 1989. Conditions have not changed much since then, said Mr. Cerne. He listed the following problems:

- Air pollution. Bad conditions with little hope of improvement. Poisonous emissions decreased slightly because of the switch to gas. There was an increase in noxious emissions from traffic and a slight decrease in acid rain. Almost 44 percent of the forests are damaged.
- Water pollution. Approximately 90 percent of the surface water has pollution levels higher than environmentally acceptable levels. A new problem is degradation of underground waters and springs. Presently huge projects for sanitation of water are in operation on the River Reka and the River Sava.
- Noise protection. More than 50 percent of the inhabitants live under conditions where noise levels exceed 55 decibels.
- Soil pollution. Initial investigations show that heavy metals have caused tremendous problems.
- Waste management. The country has an underdeveloped system for municipal waste and still no technical solution for industrial waste.
- Food and potable water. Conditions are now within acceptable limits.

"We Are Not Alone"

Fedor Cerne came home from the Environmental Symposium feeling somewhat encouraged. "I felt," he said, "that we are not alone in suffering environmental problems." For ex-

ample, he cited Tennessee's own problem of trees dying in the Smoky Mountains while smoke-stacks in nearby industrial areas continue to emit noxious fumes. Mr. Cerne said he realized that lack of money is not the greatest problem. "The hardest problem is to collect enough knowledge in the field of of environmental protection and development and to find a way to collaborate with a cross section of sources. My fundamental conclusion was that our chance to succeed is through a step-by-step policy. We can do only what we can realize. I must say that I came home a little more hopeful about the future of the universe. But I am still not sure about whether the intentions of those in financial and political power are fair. Reform in the U.S. is changing from a "command and control" mode to one that uses economic sanctions. I think that in Slovenia we must first develop the efficient command-and-control approach. After we improve the market system we can develop the step-by-step method."

Current Obstacles

Current obstacles to success, besides the financial problems and the struggle to change to a market economy, are what Mr. Cerne terms "eco-illusion," or an illusion in goal setting. He also cites unsustainable conditions caused by the structural reform in the economy resulting from deep social tensions. And, at this stage of transition, he considers it vital that detailed plans for the environment be considered at the very outset and incorporated into the new political planning. Cooperation with Austria and Italy has been helpful, with the federal state and the republic government aiding the process.

At this writing, money comes from loans or through fines paid by those who are doing the polluting, but new funding sources seem to be opening up. Mr. Cerne also stresses the need for education and training in the fields of environmental economics and environmental management. "Slovenia is [in] a very critical period of its development," he said. "The political, social and economic situation in changing very quickly. We must work for environmentally sound reform of the economy, find a sustainable path of development, insist on strict precautions, and concentrate on cleanup programs, with waste managment and air quality as priorities.

BERLIN, GERMANY

"In the summer of 1990," says Helmut Konigshaus, Germany *was* still divided, and on the environmental issue, the division *still* exists." Mr. Konigshaus attended the Symposium as West Berlin's Division Chief of Toxic Waste Management and senator for environmental affairs. "In former West Germany," he said, "environmental conditions are on levels similar to those in the United States. In former East Germany, however, we have severe problems that we are trying to solve step by step. Because of economic problems following the reorganization of the former planned economy, many plants in the eastern parts of the country are not presently operating. This is a catastrophe economically, but it is progress ecologically. Our aim is to create a Germany of economic prosperity and environmental peace."

As a citizen of what used to be West Germany, Mr. Konigshaus observed the problems of the eastern half of the country "over the fence,"and at last, on July 1, 1990, the governments of the two states agreed to raise the Eastern standards to meet those in the West. Now, after official unification of the country, those laws are effective across the entire region. All told, more than 140 billion Deutschmarks ($80 billion U.S. dollars) per year will flow into the eastern half of the country to raise conditions to a level with the West. Much of that amount is allocated for environmental reforms. The ingredients for success are in place: strict regulations and money to achieve the standards. Now time is the greatest impediment, but there is strong impetus for reform from citizen action groups, government agencies and coalition groups, and a forceful program of public education. Most of the funding comes from the federal government.

Recent Reforms

Recent reforms in West Germany require catalytic converters for automobiles, the enforcement of which has been enhanced by tax reductions. Discharging of pollutants is limited by law in all parts of the country. Use of lignite coal containing more than one percent of sulfur, used primarily in former East Germany, is prohibited in Berlin and the western part of the country and—effective in the next few years—will be prohibited in most of the states in the eastern part of the country.

Other projects underway in former East Germany are a plan to ensure that drinking water is free from harmful levels of contaminants and that polluted rivers and lakes are cleaned up. In addition, said Mr. Cerne, "in East Germany, we have no landfills or incinerators that meet common Western standards, so we are searching for suitable locations for new facilities. In the meantime, we have to use the old facilities. This is unsatisfactory, but unavoidable."

One positive note is that the Russian-style nuclear plants in East Germany were closed down with the reunification. As part of the EEC, Germany receives cooperation from the community as well. Further cooperation exits among bordering countries, e.g., Poland, Hungary, and the Czech and Slovak Federal Republic. Says Mr. Cerne, "I am more hopeful about the future of the universe than I was before the Environmental Symposium. I am sure that this process will develop in the countries of the Third and Fourth Worlds as well as . . . in East Europe. The best way to enforce this movement is to spread the spirit of our Symposium all over the world. International cooperation starts with initiatives like the Conference of the Alliance of Universities for Democracy."

BITTERFIELD, GERMANY

Rolf Weiher, who came to the Symposium as director of the East German Bitterfield Office of Environmental Protection, has seen many changes since he returned home a year ago, many of them on a personal level. Although he is only 58 years old, he lost his job in the district office because of layoffs and was urged to go into retirement. But Mr. Weiher was not ready to abandon a cause he had worked for so fervently.

In September 1990 he made a proposal to the former minister of environmental protection of the German Democratic Republic and was awarded 22,000 DM ($100,000 American dollars) to improve the environment. With part of the money he established an environmental library and filled it with books and journals. With a computer and a few other pieces of equipment, he opened a center for environmental education for "training officials, people off the street, everybody." The funds also allowed for the production of an environmental magazine. Now he has a forum for addressing the problem of gray and unhealthy air in the streets and the degradation of the Bitterfield parks and ponds.

"We want to do something to reconstruct the old-fashioned historic places in Bitterfield," says Mr. Weiher. He hopes to remain as the director for the environmental library and has employed six librarians who had been laid off from the now defunct chemical industry. Those layoffs represent only a miniscule portion of the 30,000 people who have lost their positions in factories and plants because of environmental hazards or because of the change from the central planned economy to the open market economy. "In our region," says Mr. Weiher, only about one-third of the factories are still operating. After the first democratic elections, everything has changed."

"A Long Way, But A Strong Way"

Mr. Weiher calls the transition "a very long way [to correct the problems] but a strong way." Obviously, he says, much is already being done to improve conditions in what was formerly East Germany, "but so much is still to be done. We need the help of all the Germans, of Europe, and people from overseas. But those in Poland, Hungary, Czechoslovakia, and especially in the disintegrating Soviet Union also need help. I think a good way to go is through organizations like the Alliance of Universities for Democracy."

In the countries of some of the representatives at the Symposium, little or nothing has been done to change environmental conditions in the past year, but it seems obvious that the fight to rescue the environment can be won only on an international level. As we learned with Chernobyl, noxious fumes can be borne for hundreds of miles in clouds or through the atmosphere. And those who live in the dirty triangle know with certainty that pollution can drift on the winds across land and water. In our shrinking world, no one is safe from the carelessness or indifference of his fellow man. Yet it is comforting to know that in every country, in every region, there still remain undaunted champions of nature and humanity who will continue to fight for the right of every human being to own, as citizens of the universe, a clear blue sky, clean sparkling water, and lush green forestlands.■

Countries and representatives participating in the environmental tour and the international Symposium on Environmental Policy included the following:

Bulgaria: Ivan Todorov Raev, head, Department of Ecology and Environmental Protection, Forest Research Institute of the Academy of Sciences; and Delcho Georgiev Vitchev, citizens' environmental group, Ecoglasnost.

Czechoslovakia: Eva Kruzikova, head, Department of Foreign Relations; and Svatomir Mlcoch, chief, public relations, Ministry of Environment.

German Democratic Republic (East Germany): Uwe Schlenker, scientist, Department of Geological Sciences, Mining Academy in Freiberg; and Willi Rolf Weiher, director, Bitterfeld Office of Environmental Protection.

Hungary: Angela Lely, Green Party, and Action Group Against Pollution.

Poland: Michal Zaremba-Czereyski, head, Bilateral Cooperation Division, Department of International Cooperation in the Ministry of Environment; and Kazimierz Liszka, head specialist, state Environmental Inspection Center in Krakow.

Yugoslavia: Fedor Cerne, a former advisor to the Slovenian Minister who now works for the Slovenian Ministry of Environment and Physical Planning; and Vesna Vladikovic, Counsellor for Information Systems, Environmental Division in the Federal Secretariat for Development.

Austria, Wolfram Tertschnig, head, Department of Environmental Technologies and Environmental Research Policies in the Ministry for Environment, Youth and Family.

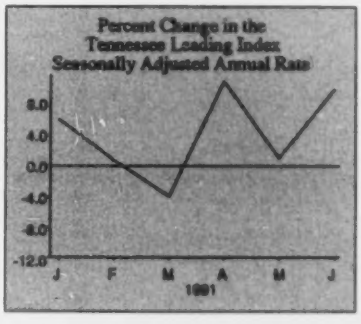
Federal Republic of Germany, Hellmut Koenigshaus from the (West Germany), Division Chief of Toxic Waste Management and a senator for environmental affairs.

TENNESSEE ECONOMIC OVERVIEW

(June Index as of August 20, 1991)

The Tennessee index of leading economic indicators rose in June at a seasonally adjusted annual rate (SAAR) of 12.6 percent. This constituted the third consecutive monthly increase in the index, which has risen each month of this year with the exception of March. A 6 percent (SAAR) increase in the U.S. leading index in June contributed to the latest surge in the state's leading indicators; very strong gains in inflation-adjusted taxable mortgages and taxable sales also contributed significantly. Another positive factor reflected in the June increase in Tennessee's leading indicators is the steep drop in initial claims for Tennessee unemployment insurance. New unemployment claims fell to 39,800, down from levels of 50,400 in May and 62,200 in April. The sole component to negatively impact the Tennessee leading index was total Tennessee construction starts, which fell in June.

The 10.3 percent (SAAR) rise in Tennessee's index of coincident indicators provides additional positive news regarding the health of the state's economy. The latest increase reverses the decline in the coincident index which occurred in May. Two seasonally adjusted components contributed to the climb in the state's composite coincident index. First, the U.S. index of coincident indicators registered a 3.9 percent (SAAR) increase, the third consecutive monthly increase in the national index. In addition, Tennessee commercial and industrial electrical consumption also rose for the third straight month, posting a substantial advance in June. On the downside, the third component of the Tennessee coincident index--the Memphis help-wanted index--fell for the second consecutive month.



The negative effects of the recession remain apparent in Tennessee labor markets. While the state's unemployment rate fell slightly in June to 6.1 percent, seasonally adjusted Tennessee nonagricultural and manufacturing employment endured sizable decreases in June. Nonagricultural employment in the state fell 7.7 percent (SAAR); this continued a consistent decline experienced since March. Meanwhile, Tennessee manufacturing employment fell 7.8 percent (SAAR) in June, marking the sixth consecutive monthly decrease in the statistic. The magnitude of the drop in nonagricultural employment suggests that employment loss has spread from manufacturing and construction to other sectors of the economy, including services and trade. Moreover, nonagricultural employment and manufacturing employment were down 1.2 and 3.0 percent, respectively, compared with the previous June, further illustrating the weakness of Tennessee labor markets during the recent downturn.

Overall, June's indicators are very encouraging. The Tennessee leading index has established a positive trend, and the coincident index has exhibited considerable strength in two of the last three months. Upward trends established by both the U.S. leading and coincident indices suggest that a recovery has most likely begun on the national scale. A strong U.S. recovery is a major element necessary for renewed vigor in the Tennessee economy. Still, though signals point to the beginnings of a recovery in the state, it remains premature to unambiguously assert that the recession is over. A remaining source of concern, for instance, is the persistent weakness in Tennessee labor markets, which fails to confirm an improving economy.

FIGURE 1
Coincident and Leading Indexes

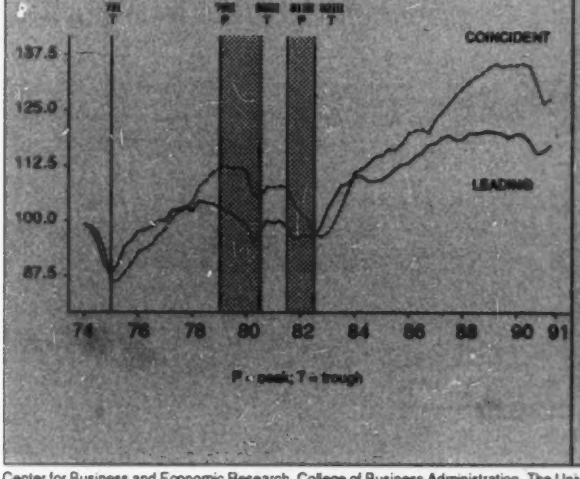
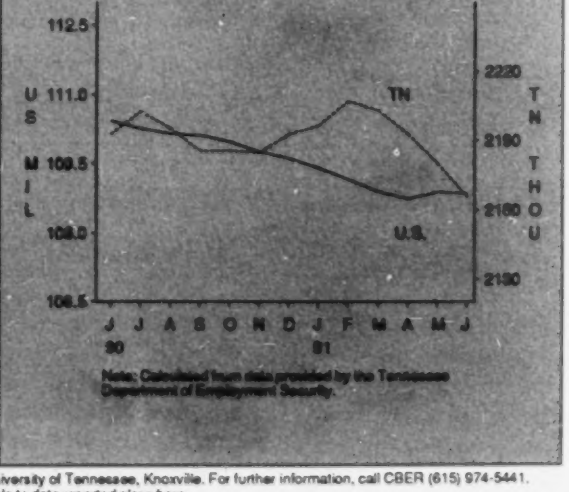


FIGURE 2
Total Nonagricultural Employment
Seasonally Adjusted



Center for Business and Economic Research, College of Business Administration, The University of Tennessee, Knoxville. For further information, call CBER (615) 974-5441.
Data reported herein are seasonally adjusted, and therefore may not be directly comparable to data reported elsewhere.

TENNESSEE ECONOMIC INDICATORS

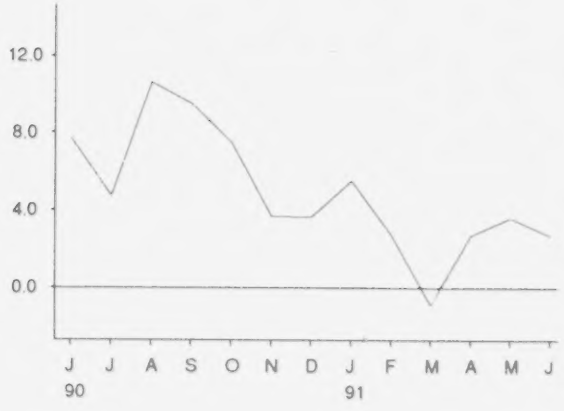
SEASONALLY ADJUSTED

	6/90	7/90	8/90	9/90	10/90	11/90	12/90	1/91	2/91	3/91	4/91	5/91	6/91	1988	1989	1990
US Personal Income (BIL 82 $) (1)	3569.8	3572.9	3552.4	3542.8	3520.2	3524.8	3534.5	3504.3	3503.6	3518.8	3514.5	3522.5	3531.3	3438.8	3534.7	3553.7
% Chg Prev Month SAAR	-2.38	1.07	-6.68	-3.19	-7.41	1.60	3.35	-9.78	-0.26	5.35	-1.47	2.76	3.06	3.84	2.79	0.54
% Chg Same Month Last Yr	1.32	1.14	0.63	0.30	-0.60	-0.72	-0.65	-1.34	-1.54	-1.44	-1.54	-1.52	-1.08	3.84	2.79	0.54
US CPI,All Urban Consumers (1982-84=100)	130.0	130.5	131.6	132.6	133.4	133.8	134.2	134.8	135.1	135.0	135.3	135.7	136.0	118.4	124.0	130.7
% Chg Prev Month SAAR	7.69	4.71	10.60	9.51	7.48	3.66	3.65	5.50	2.70	-0.88	2.70	3.61	2.69	4.09	4.79	5.40
% Chg Same Month Last Yr	4.75	4.82	5.62	6.16	6.38	6.27	6.17	5.64	5.38	4.90	4.88	5.03	4.62	4.09	4.79	5.40
TN Nonag Employment (THOU) (2)	2192.9	2202.8	2195.5	2185.7	2185.7	2184.8	2192.8	2196.5	2207.0	2203.2	2192.9	2180.4	2165.9	2091.3	2167.0	2195.5
% Chg Prev Month SAAR	-3.47	5.55	-3.88	-5.21	-0.03	-0.50	4.48	2.06	5.91	-2.08	-5.46	-6.63	-7.69	3.98	3.62	1.31
% Chg Same Month Last Yr	1.24	1.51	0.93	0.43	0.77	0.33	0.12	0.53	0.17	-0.30	-0.71	-0.86	-1.23	3.98	3.62	1.31
US Nonag Employment (MIL)	110.4	110.3	110.2	110.1	110.0	109.8	109.6	109.4	109.2	108.9	108.7	108.9	108.9	105.5	108.3	110.0
% Chg Prev Month SAAR	1.43	-1.79	-1.18	-0.51	-1.42	-2.38	-1.52	-2.20	-2.79	-2.80	-1.81	1.68	-0.23	3.27	2.65	1.52
% Chg Same Month Last Yr	1.99	1.76	1.54	1.32	1.09	0.64	0.40	0.00	-0.58	-0.94	-1.09	-1.28	-1.42	3.27	2.65	1.52
TN Unemployment Rate (%) (2)	4.8	5.0	5.1	5.4	5.6	5.7	6.3	6.5	6.4	6.5	5.7	6.2	6.1	5.8	5.1	5.2
US Unemployment Rate (%)	5.3	5.5	5.6	5.7	5.7	5.9	6.1	6.2	6.5	6.8	6.6	6.9	7.0	5.5	5.3	5.5
Bank Prime Interest Rate (%)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	9.5	9.0	9.0	9.0	8.5	8.5	9.3	10.9	10.0
US Coincident Composite Index (1982=100)	134.9	134.6	134.4	133.3	131.8	130.4	129.3	127.3	126.6	126.0	126.2	126.6	127.0	130.0	133.5	133.1
% Chg Prev Month SAAR	4.56	-2.64	-1.77	-9.39	-12.70	-12.03	-9.67	-17.06	-6.40	-5.54	1.92	3.87	3.86	5.19	2.71	-0.27
% Chg Same Month Last Yr	1.12	1.20	0.30	-0.30	-0.98	-2.25	-3.36	-4.07	-5.38	-6.11	-5.61	-5.80	-5.86	5.19	2.71	-0.27
US Leading Composite Index (1982=100)	146.2	146.2	144.4	143.2	141.5	139.7	139.4	138.7	140.2	141.4	141.8	142.9	143.6	142.7	144.9	143.9
% Chg Prev Month SAAR	1.66	0.00	-13.81	-9.53	-13.35	-14.24	-2.55	-5.86	13.78	10.77	3.45	9.72	6.04	1.90	1.54	-0.70
% Chg Same Month Last Yr	1.39	1.46	-0.35	-1.17	-2.01	-3.39	-4.06	-4.61	-2.71	-2.75	-2.34	-2.12	-1.78	1.90	1.54	-0.70
TN Coincident Composite Index (1/74=100)	135.7	136.2	134.9	133.7	133.0	130.2	129.7	127.7	126.3	125.8	127.5	127.0	128.0	131.8	135.1	134.2
% Chg Prev Month SAAR	4.18	5.12	-11.45	-9.46	-6.34	-22.44	-4.51	-17.45	-11.99	-4.66	17.40	-4.67	10.32	4.92	2.50	-0.66
% Chg Same Month Last Yr	0.53	1.62	-0.27	-1.15	-1.68	-3.42	-4.25	-6.09	-5.79	-7.12	-6.12	-6.06	-5.61	4.92	2.50	-0.66
TN Leading Composite Index (1/74=100)	120.0	118.9	117.8	116.6	116.2	115.0	115.1	115.8	115.9	115.4	116.7	116.8	118.0	119.5	119.7	118.1
% Chg Prev Month SAAR	6.31	-9.94	-10.61	-11.96	-4.36	-11.49	1.23	7.70	1.00	-4.93	13.93	1.32	12.64	0.87	0.16	-1.33
% Chg Same Month Last Yr	0.49	0.19	-1.84	-2.93	-2.10	-3.75	-2.97	-3.70	-3.35	-3.20	-2.19	-2.15	-1.67	0.87	0.16	-1.33
TN Comm & Ind Elect Consumption (MIL KWH) (3)	2369	2471	2377	2452	2440	2350	2330	2370	2356	2325	2397	2398	2496	26788	27779	28627
% Chg Prev Month SAAR	5.42	65.51	-37.14	45.34	-5.81	-36.18	-9.73	22.23	-6.53	-14.67	43.84	0.47	62.07	6.64	3.70	3.05
% Chg Same Month Last Yr	2.31	8.43	2.71	5.63	4.91	-0.52	-1.81	-4.91	2.95	-0.33	1.27	1.66	5.37	6.64	3.70	3.05
Help Wanted Index,Memphis (1967=100) (4)	131	129	125	114	119	109	114	104	97	99	108	100	99	144	143	127
% Chg Prev Month SAAR	0.00	-16.86	-31.48	-66.89	67.38	-65.12	71.29	-66.77	-56.66	27.75	184.09	-60.29	-11.36	0.93	-0.87	-10.92
% Chg Same Month Last Yr	-7.75	-7.19	-10.71	-20.28	-19.59	-19.26	-17.39	-25.71	-25.95	-28.78	-25.00	-23.66	-24.43	0.93	-0.87	-10.92
TN Mfg Employment (THOU) (2)	522.1	523.2	523.2	519.8	519.1	517.7	519 0	517.1	514.7	513.9	510.5	509.9	506.4	511.7	524.5	522.7
% Chg Prev Month SAAR	-3.26	2.39	0.00	-7.45	-1.59	-3.18	3.08	-4.43	-5.37	-1.75	-7.64	-1.48	-7.82	2.88	2.50	-0.35
% Chg Same Month Last Yr	-0.78	-0.52	-0.71	-1.15	-0.91	-1.41	-1.61	-1.40	-2.19	-2.56	-3.10	-2.61	-3.00	2.88	2.50	-0.35
US Mfg Employment (MIL)	19.2	19.2	19.1	19.0	19.0	18.8	18.7	18.7	18.5	18.4	18.4	18.4	18.4	19.4	19.4	19.1
% Chg Prev Month SAAR	-1.98	-1.74	-3.21	-4.31	-4.32	-10.01	-3.64	-4.88	-8.58	-5.61	-3.01	1.97	-3.21	1.72	0.47	-1.70
% Chg Same Month Last Yr	-1.40	-1.41	-1.67	-1.73	-1.91	-2.80	-3.00	-2.83	-4.03	-4.38	-4.46	-4.16	-4.26	1.72	0.47	-1.70
TN Mfg Avg Weekly Hours (2)	38.5	39.2	38.7	38.8	38.4	38.8	38.9	39.5	39.6	39.5	39.7	39.2	39.2	41.6	40.8	38.6
% Chg Prev Month SAAR	0.46	22.96	-13.40	2.95	-10.92	12.78	4.45	18.01	3.88	-1.76	5.33	-15.74	0.12	0.05	-1.86	-5.35
% Chg Same Month Last Yr	-6.41	-4.24	-5.17	-5.95	-4.91	-2.88	-0.67	1.60	2.54	2.69	4.79	1.78	1.75	0.05	-1.86	-5.35
TN Taxable Sales (MIL $) (5)	3597	3631	3512	3466	3528	3602	3530	3532	3614	3599	3565	3642	3684	39836	41400	43118
% Chg Prev Month SAAR	20.39	11.89	-32.90	-14.71	23.83	28.26	-21.37	0.52	31.63	-4.93	-10.62	29.35	14.61	5.97	3.93	4.15
% Chg Same Month Last Yr	4.58	5.22	0.15	-1.06	3.17	3.71	0.99	-2.52	-5.60	-0.09	-2.56	2.84	2.42	5.97	3.93	4.15
TN Taxable Sales (MIL 82 $) (5)	2767	2782	2669	2614	2645	2692	2631	2620	2675	2666	2635	2684	2709	33656	33380	33000
% Chg Prev Month SAAR	11.80	6.85	-39.33	-22.12	15.21	23.73	-24.13	-4.72	28.17	-4.08	-12.97	24.85	11.62	1.83	-0.82	-1.14
% Chg Same Month Last Yr	-0.17	0.39	-5.17	-6.80	-3.02	-2.42	-4.88	-7.72	-10.42	-4.75	-7.10	-2.08	-2.10	1.83	-0.82	-1.14
Initial Claims For TN UI (THOU) (2)	34.8	45.5	46.8	49.7	56.6	56.5	50.4	35.0	45.4	54.6	62.2	50.4	39.8	416.1	464.5	561.0
% Chg Prev Month SAAR	-97.0	2370.5	40.7	105.4	379.4	-2.6	-74.7	-98.7	2185.3	804.6	377.4	-91.9	-94.1	-5.2	11.6	20.8
% Chg Same Month Last Yr	-14.54	8.93	9.49	28.66	40.28	41.80	16.74	-20.37	9.12	26.85	37.55	7.92	14.29	-5.22	11.62	20.77
Continued Weeks Claimed For TN UI (THOU) (2)	209.8	227.7	217.9	217.2	260.3	255.8	257.3	267.2	278.6	261.3	345.3	293.5	261.4	2064.4	2173.6	2696.7
% Chg Prev Month SAAR	-61.7	167.6	-40.9	-4.1	778.3	-18.9	7.4	57.3	65.3	-53.8	2745.8	-85.8	-75.1	0.1	5.3	24.1
% Chg Same Month Last Yr	17.64	30.38	11.12	20.57	34.72	25.94	34.72	26.16	40.16	36.04	56.28	29.17	24.60	0.07	5.29	24.07
Total TN Construction Starts (6)	416.6	392.3	385.3	388.1	445.7	341.0	419.1	391.8	407.9	352.4	469.4	376.8	357.6	5284.4	5326.0	4980.4
% Chg Prev Month SAAR	-70.5	-51.4	-19.3	9.1	425.4	-96.0	1088.3	-55.5	62.2	-82.7	3017.7	-92.8	-46.5	-1.0	0.8	-6.5
% Chg Same Month Last Yr	-6.18	-7.07	-18.44	-17.62	4.82	-20.25	10.06	-12.74	-2.57	-14.42	3.96	-18.31	-14.15	-0.99	0.79	-6.49
Value Of TN Constrc Starts (MIL 82 $,NSA) (6)	381	239	342	266	338	179	255	153	205	273	338	322	242	4240	4053	3353
% Chg Prev Month SAAR	1288.5	-99.6	7281.1	-95.2	1657.6	-100.0	6846.2	-99.8	3163.9	2976.6	1211.4	-44.2	-96.8	-5.7	-4.4	-17.3
% Chg Same Month Last Yr	-5.48	-18.92	-21.42	-45.78	15.93	-34.76	-16.13	-42.64	-10.28	-3.46	26.02	5.28	-36.47	-5.70	-4.40	-17.28

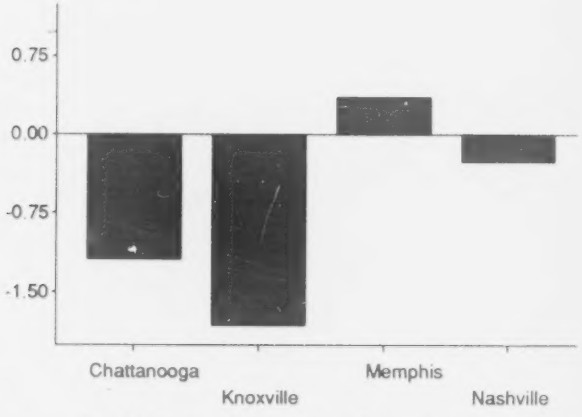
	88/I	88/II	88/III	88/IV	89/I	89/II	89/III	89/IV	90/I	90/II	90/III	90/IV	91/I	1988	1989	1990
US GNP (BIL 82 $) (1)	3970.2	4005.8	4032.1	4059.3	4095.7	4112.2	4129.7	4133.2	4150.6	4155.1	4170.0	4153.4	4124.1	4016.9	4117.7	4157.3
% Chg Prev Qtr SAAR	5.15	3.64	2.65	2.73	3.64	1.62	1.71	0.34	1.69	0.43	1.44	-1.58	-2.79	4.46	2.51	0.96
% Chg Same Qtr Last Yr	5.00	4.86	4.49	3.54	3.16	2.66	2.42	1.82	1.34	1.04	0.98	0.49	-0.64	4.46	2.51	0.96
TN Personal Income (MIL $) (1)	65975	67707	68919	70221	71487	72383	73078	74080	75975	76715	77785	78283	79095	68206	72757	77190
% Chg Prev Qtr SAAR	4.98	10.92	7.35	7.77	7.41	5.11	3.90	5.60	10.63	3.95	5.70	2.59	4.21	8.71	6.67	6.09
% Chg Same Qtr Last Yr	8.08	9.53	9.52	7.74	8.35	6.91	6.03	5.50	6.28	5.98	6.44	5.67	4.11	8.71	6.67	6.09
TN Personal Income (MIL 82 $) (1)	53989	54823	55179	55599	55893	55894	56128	56206	56698	56742	56777	56197	56295	54898	56030	56604
% Chg Prev Qtr SAAR	2.59	6.32	2.62	3.07	2.13	0.01	1.68	0.56	3.54	0.31	0.25	-4.02	0.70	4.66	2.06	1.02
% Chg Same Qtr Last Yr	4.01	5.54	5.49	3.64	3.53	1.95	1.72	1.09	1.44	1.52	1.16	-0.02	-0.71	4.66	2.06	1.02

1. Annual Rate.
2. Calculated from data provided by the Tennessee Department of Employment Security.
3. Source: Tennessee Valley Authority.
4. Source: The Conference Board.
5. Calculated from sales tax collections, provided by the Tennessee Department of Revenue.
6. Source: F.W. Dodge Division of McGraw-Hill Information Services Company.

Percent Change in the U.S.
Consumer Price Index
Seasonally Adjusted Annual Rate

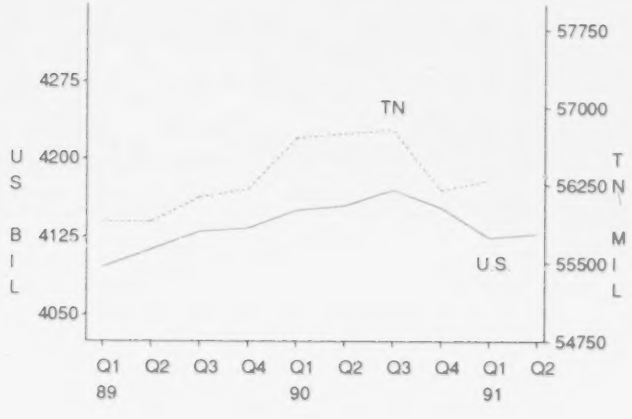


MSA Nonagricultural Employment Growth
June 1990 - June 1991

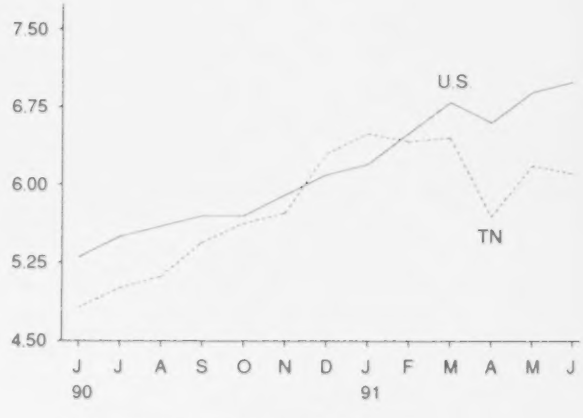


Note: Calculated from data provided by the Tennessee Department of Employment Security.

Real Personal Income
Seasonally Adjusted Annual Rate
1982 Dollars



Civilian Unemployment Rates
Seasonally Adjusted



Note: Calculated from data provided by the Tennessee Department of Employment Security.

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